

# American Artisan

and Hardware Record

## Sheet Metal Work-Warm Air Heating

Vol. 94, No. 2

CHICAGO, JULY 9, 1927

\$2.00 Per Year

### Announcing An Expansion Program

☛ IN 1925, the Agricola Furnace Company was organized at Gadsden, Alabama, with the one thought "To build a Better Furnace".

☛ IN 1926, 8000 Agricola furnaces were sold and installed.

☛ IN 1927 the sales will grow to 18,000.

THE AGRICOLA FURNACE is now an established success.

☛ IN 1928, because of our expansion sales policy our sales will grow, through recognized jobbers and dealers, to 25,000 Agricola furnaces, pipe and pipeless.

RECOGNIZED jobbers and dealers are invited to learn of this "better" furnace and our new program of sales expansion by writing to

AGRICOLA FURNACE CO.  
GADSDEN, ALA.



25,000  
FURNACES  
IN  
1928

1926  
8,000

1927  
18,000

1928  
25,000

1928  
will be an  
Agricola Year

# How to Sell Heat when it's Hot!

**M**UELLER dealers are avoiding last-minute rush jobs by lining up furnace prospects now, during the Summer months. But it isn't done with ordinary methods.

It takes intensive sales pressure to make a man buy heat when he's hot! Mueller furnishes this extra pressure in the form of a comprehensive localized merchandizing program which locates repair and replacement prospects and follows them through to the sales.

And back of all this, is heating service. The Mueller dealer doesn't just sell a furnace—he sells dependable heat at low fuel cost. He has sales-building features that he can show the customer—such as the Mueller Zone of Extra Heating Capacity in the Mueller Double Radiator Furnace, the upright shaker on the Full Front return flue furnace—that make Mueller Furnaces easy to sell. And Mueller free engineering service is worth mentioning, too.

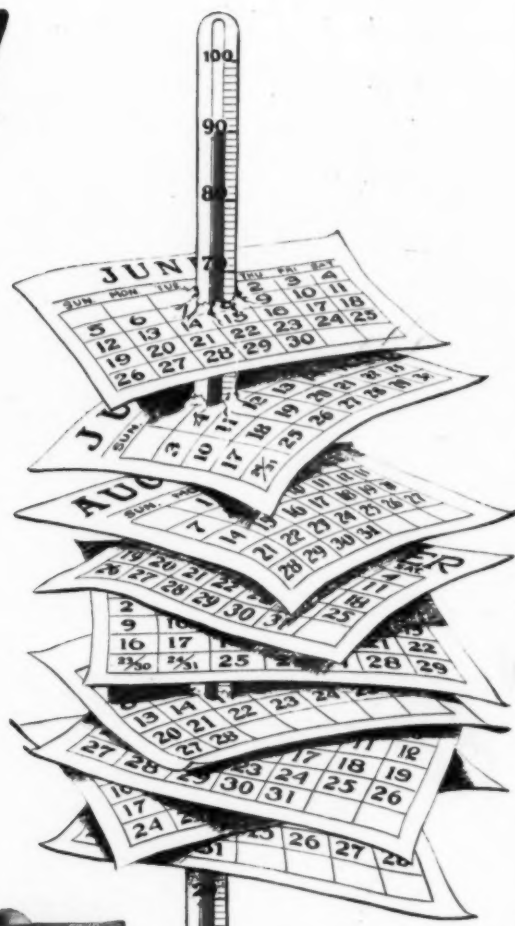
Another heating season is just around the corner. Get under way with your installations before it gets under way! Let Mueller give you a lift. Let's sell heat while the weather is hot!

**L. J. MUELLER FURNACE CO.**  
193 Reed Street MILWAUKEE, WIS.

ESTABLISHED 1857

Makers of Coal and Gas-Fired Heaters for Warm Air, Steam and Hot Water, Cabinet Heaters, Combination Tank Heaters and Garbage Burners, Registers, Furnace Pipe and Fittings.

WAREHOUSES: Boston, Baltimore, Detroit, St. Louis, St. Paul, Minneapolis, Ft. Collins, Colo., Salt Lake City, Seattle



**Mueller Full-Front Return Flue Furnace**—The latest addition to the Mueller line. Full front, with projecting ash pit and feed section, set in place without bolts. Upright shaking device, with triangular duplex grates.

**Mueller Double Radiator Furnace**—a self-cleaning warm air furnace with more direct heating surface than any other furnace of equal grate area. Actually "tons of coal cheaper" in operation.



## MUELLER FURNACES

easier to sell than to sell against

### Would You Shut Up Shop for Three Months?

When the first roller skates of spring clatter down suburban streets and the green begins to appear on the lean willow twigs, a curious madness seizes upon some people. They dictate a note to the general effect that their advertising will be cut in half or discontinued entirely during June, July and August. Having sent this note to their advertising agent or to a list of publications, they, in the manner of men who have accomplished a clever piece of work, set off for the links to try out the new mashie.

But we wonder if the men who dictate such notes in the spring realize what they are really saying to their own organizations. Some self-styled experts have maintained that advertising is 23 per cent less effective during the three summer months. This statement is not conceded but, in the manner of Hans Christian Anderson, let's suppose it is true. Were the owner of a business to weigh the effect on his own organization against that supposed saving, he would never send the note. What such a note actually says to the man's own organization is "Let's all take it easy. We are not going to make any effort to help make your selling easier, gentlemen of the sales force. Here, then, are three lovely months in which you may improve your golf game. Instead of going out hard after orders this July, why not get rid of that disconcerting slice which robs your drive of at least twenty yards in distance? Don't work, office boy. Go to the ball game. Use that new bathing suit at least three times a week, stenographer."

An order cutting down advertising effort is notice in advance that a period of undisturbed and restful calm is expected by the management. No need to rush about after prospects — here comes a period of comforting repose.

Don't write letters or make selling plans; go out in the woods to loll at leisure under a sycamore tree.

Don't work very hard; just drone and dawdle through the drowsy days ahead.

Relax. Let down. Be languid. Not much doing in the summer months, so take it easy.

If, when he was dictating a seasonal note to cut down his company's advertising effort, the president would consider himself posting around the plant sentiments like these, he might hesitate.

And now to add one serious word of advice to a somewhat satiric treatment of the dangerous habit of cutting off advertising effort in the summer months: Let all advertisers consider carefully what other concerns have done to knock out the so-called "summer slump" before they decide not to advertise.

Remarkable things have been accomplished by men who analyzed their markets and products more carefully, who refused to believe that customers spend three months in a hammock under the trees.

And every time real results in taking sales slumps out of summer have been attained, advertising has played a most important part.

This summer of all summers during the past five years, is most dangerous to the man who thinks he can cancel advertising and travel on momentum.

There will be ample business next fall for the people who keep after it during the dog days. But those misguided ones who serve notice on their whole organization to take it easy by cancelling advertising during the summer are going to discover when fall comes that consistent advertising and sales effort during this important summer have given their competitors a big head start.

Editorial reprinted from  
PRINTERS' INK



## Built for Speed and Endurance, Too—

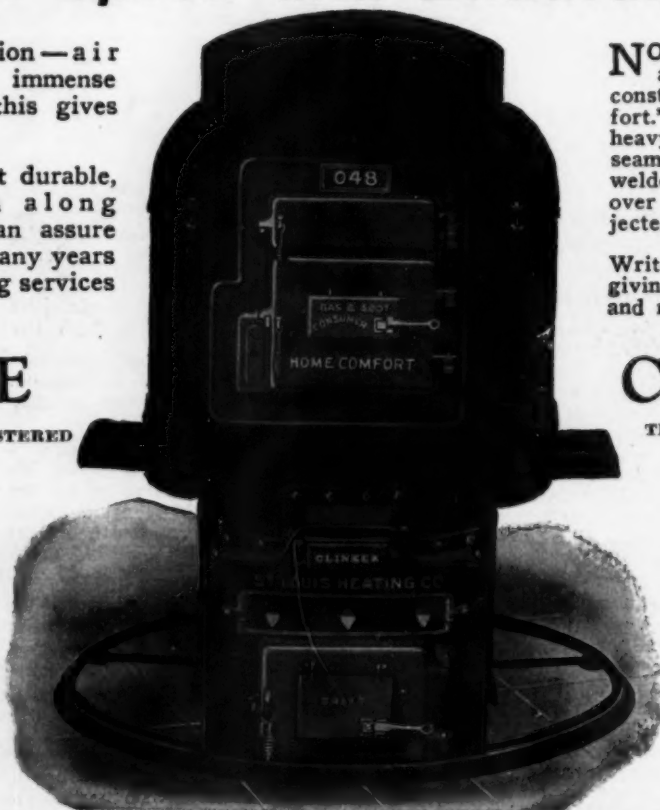
**STEEL** construction—air tight and with immense radiating surface—this gives quick heating.

But be sure you get durable, sturdy construction along with steel. You can assure your customers of many years of real severe heating services with the

### "HOME

TRADE MARK REGISTERED

**"HOME COMFORT"** Steel Furnaces are sold only to the trade—The agency is an assured money maker. Let us outline the Home Comfort Agency plan to you now. Write for our booklet "The Joy of Home Comfort."



**NOTICE** the large double doors and the solid, sound front construction on the "Home Comfort." The dome is one piece heavy gauge steel plate. The one seam is tight riveted practically welded and is in front directly over the feed door where it is subjected to the least heat.

Write today for complete catalog giving full detailed information and numerous illustrations.

### COMFORT"

TRADE MARK REGISTERED

## ST. LOUIS HEATING COMPANY

2901-11 Elliot Avenue  
St. Louis, Missouri

PITTSBURGH DISTRIBUTOR  
Wagener Bros., 3605 East Street

## Make Better Sales With These Better Wise Furnaces

**W**ISE dealers and many new Wise dealers are now confining their purchases to one house because they find in the Wise line a complete quality line.

**NOTICE** that Wise has eliminated the big weak spot in steel furnace construction. The bottom of the radiator has a **CAST IRON SOOT BOX AND CLEAN OUT.**

**RIVETED AND WELDED BODY — SPECIAL DESIGN GRATES and LEVER SHAKER HANDLE.**

Other features too—and a guarantee that helps you sell this quality steel furnace.

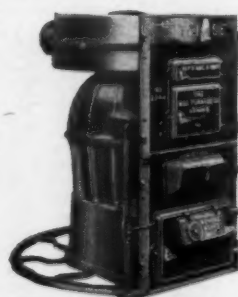


WISE STEEL FURNACE

**T**HE Wise Open Dome Furnace has been greatly improved. The new Wise **ONE-PIECE Cellular Firepot** allows the air to become thoroughly preheated before entering above and into the fuel. Another feature is the **Elbow Shaped Flue Collar** on inside of Radiator which is turned up so all of the heat must follow the castings to the top before entering flue.



WISE OPEN DOME  
CAST FURNACE



WISE 20 SERIES CAST  
FURNACE

**T**HE Wise 20 Series has a New Patented Radiator. Construction allows communication between feed chamber and top radiator which brings the opening of the fire flues of the radiator directly into the feed chamber, making the flues readily accessible for cleaning through the upper feed door. The dirt falls directly into the firepot. This is a big advantage to the owner as a radiator that is easy to keep clean will be kept clean.

The New Wise **CELLULAR FIRE POT** is also a feature of this furnace.

Write for special circular today.

## The WISE FURNACE COMPANY

AKRON, OHIO



## OPTIONAL

equipment that makes it easy to please customers is a feature of the SUPERIOR Warm Air Furnace. Choice of triangular, revolving grates or flat grates with waist high shaker; and either seamless, all cast iron radiator, or permanently sealed steel plate radiator. Let us tell you more!

UTICA HEATER COMPANY, UTICA, N. Y.

365 E. ILLINOIS ST. CHICAGO, ILL.

Makers of Superior Pipe and New Idea Pipeless Furnaces



Seamless All Cast  
Iron Radiator

No joints to develop gas leakage. Deep, broad heating surfaces and liberal air passages. Unsurpassed for soft coal or wood.

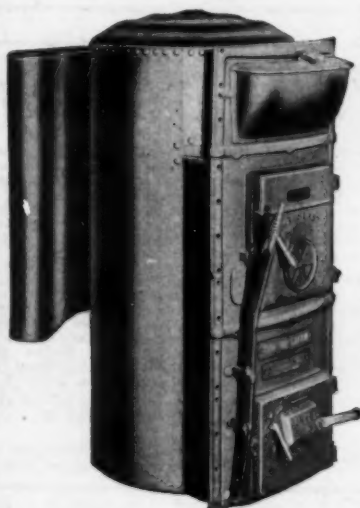


Steel Plate  
Radiator

Responds quickly with hard coal. All seams are safely and permanently sealed with special asbestos cement.

# SUPERIOR WARM AIR FURNACE

SUPERIOR DEALERS ARE EXCEPTIONALLY LOYAL — Why?



Above—Western Furnace completely assembled at factory to insure perfect fit of all parts.

Right—Western Furnace knocked down after assembly and crated for shipment.



## Why "Western" boiler plate Furnace Parts Always Fit

Every Western Furnace is completely assembled at the factory and thoroughly inspected to be sure that every part is perfect and that it will go together without fitting. When the furnaces are knocked down and packed each carton receives a number corresponding to that painted on the furnace itself. Western Furnaces can be set up more quickly because the parts are fitted at the factory.

The Western Furnace has many other practical features of design which make it an unusually easy and satisfactory heater to sell. Joints in the boiler are riveted with cold driven rivets and seams are tightly calked in addition, making the strongest, tightest and most permanent construction known. The radiator walls are made of a single sheet and front

extension is one piece with the body. Collar connections have telescopic joint, asbestos packed. Heavy double grates are easily shaken from a standing position. The corrugated dome which is an exclusive feature of the Western Boiler Plate Furnace greatly lengthens the life of the heater.

Ask for our special dealer's proposition, which includes long profits, easy terms, and a special selling plan with many advertising helps.

Western Steel Products Co.

130 Commonwealth Ave.

DULUTH, MINN., U. S. A.



A high quality furnace designed according to the Standard Code requirements for Standard Code installations

## The NEW FLORAL CITY QUEEN FURNACE

THE size of the casing and the relation of radiating surface to grate area have been carefully figured out according to the Standard Code and the ratings on this furnace are also as determined by the Code. That's a good selling point to make along with your Code installation—a real Code furnace.

### Here are Some of the New Features:

1. Large one-piece cast radiator with extra large opening from combustion chamber with direct-indirect draft damper.
2. Smoke and cleanout collar extend through the casing and front. Throats of feed door and ash pit extend through front and both doors and throat are disc ground to insure perfect fit.
3. Only four joints inside casing and these joints are extra deep covered joints.
4. Extra large water pan—lever shaker handle—rocker type grates—heavy ribbed two-section straight fire pot—large one-piece roomy ash pit and other improvements.

Write for our agency proposition today

## Floral City Heater Company

MONROE, MICHIGAN

CHICAGO OFFICE  
1654 Monadnock Building

DETROIT BRANCH  
4452 Cass Avenue

**Traveling East or West**

A restful night on beautiful Lake Erie—to or from Niagara Falls, will add enjoyment to your trip.

Palatial steamers—Unlimited facilities, including large airy state-rooms, excellent dining room service.

Daily May 1st to November 14th—Each Way Every Night between

**Cleveland and Buffalo**

Leaving 9:00 p. m., arriving 7:30 a. m. (Eastern Standard Time)

Write for new Steamer Schedule between Cleveland and Buffalo via ERIE during July and August

Connections at Buffalo for Niagara Falls, Eastern and Canadian points. Connections at Cleveland for Cedar Point, Put-in-Bay, Toledo, Detroit and points West.

Our new 32-page Tourist Guide with complete information and maps will be mailed free—on request.

Ask your ticket agent or tourist agency for tickets via C & B Line. Your rail ticket is good on our steamers.

The Cleveland and Buffalo Transit Co.  
Cleveland, Ohio

FARE \$5.50

New Auto Rate \$5.00 and up

## PATTERNS FOR STOVES AND HEATERS

THE CLEVELAND CASTINGS PATTERN COMPANY  
CLEVELAND, OHIO

## PATTERNS

FOR STOVES AND HEATERS

FIRST-CLASS  
IN WOOD and IRON

VEDDER PATTERN WORKS

ESTABLISHED  
1835

TROY, N. Y.

IRON AND WOOD

## STOVE PATTERNS

QUINCY PATTERN COMPANY  
QUINCY, ILLINOIS

When writing mention AMERICAN ARTISAN—Thank you!

# BOLTS

WE MANUFACTURE A COMPLETE LINE OF BOLT PRODUCTS, INCLUDING STOVE BOLTS, CARRIAGE BOLTS, MACHINE BOLTS, LAG BOLTS, NUTS, COTTER PINS, ETC. ALSO STOVE RODS, SMALL RIVETS AND HINGE PINS, CATALOG ON REQUEST.

**THE KIRK-LATTY CO.**  
1971 W. 85th St. Cleveland, O.

## Read This Practical Book NOW SNOW'S FURNACE HEATING

(Enlarged Revised Edition)

A book that deals with the different types of furnaces, their construction, proper location and setting together with furnace fittings. It is the standard authority.

This new edition contains a chapter covering the main features of one pipe or pipeless furnace heating, which has become a big factor in warm air heating.

Contents—Furnaces; House Heating, Combination Systems; Air Heating and Ventilation of School Buildings; Heating of Public Buildings, Churches and Stores; Fan Furnace Combination System; Temperature Control; Estimates and Contracts; Fuels; Miscellaneous Tables and Data; Furnace Fittings; Miscellaneous Notes, from Various Sources on Furnace Heating.



264 Pages  
PRICE, \$3.00  
Postpaid

Order your copy now and ask for our 10 page catalog of books.

BOOK DEPT.

AMERICAN ARTISAN 620 S. Michigan Avenue  
Chicago, Illinois

THE learning and knowledge that we have is, at the most, but little compared with that of which we are ignorant.

—PLATO

Good trade books will without a doubt help you to increase your practical knowledge of your trade. We sell good trade books.

—AMERICAN ARTISAN

# BRILLION FURNACES



**HUNDREDS** of dealers have built up live agencies with the Brillion Line.

If your business is standing still—if low quality competition is making it hard for you—**YOU NEED the Brillion HIGH QUALITY furnace** that sells at a fair, business getting price.

Notice the construction of the Brillion—it is designed for long life—efficient heating and ease of operation.

Send the Coupon Today!

BRILLION FURNACE CO.,  
200-300 Park Ave., Brillion, Wis.

Send me full details and catalog No 60.

Name.....

Address.....

**EASY  
TO INSTALL**

**CLAMPS  
ON  
NO  
BOLTS**

**REVERSIBLE**



**CUTS  
LABOR 1/3**

**EASY TO  
REMOVE**

**NO TEE  
JOINT**

**WRITE FOR PRICES**

TEELA SHEET METAL CO. — OSHKOSH, WIS.

**The NEW TEELA BOLTLESS REVERSIBLE CHECK DRAFT**

**REPAIRS  
for  
STOVES  
FURNACES  
and  
BOILERS**

**Send for these  
illustrated  
order blanks  
today~**

*We have the largest and  
most complete stock of ~*

**STOVE, FURNACE & BOILER REPAIRS  
NORTHWESTERN STOVE REPAIR CO.  
CHICAGO - ILLINOIS**

## It Looks the Part

One doesn't have to know a lot about warm air heating to recognize that this new Series "C" is a wonderful combination of fine features.

That is what makes the Moncrief Furnace such a great selling proposition. You don't have to argue or explain. Its superiority is self evident.

If you want a furnace that will sell easily, that can be easily installed, and will heat easily, you are looking for the new Series "C."

Send for details

## The HENRY FURNACE & FOUNDRY CO.

3471 E. 49th St. Cleveland, Ohio

*We supply everything used  
on a warm air heating job.*

*Distributors:*

Carr Supply Co., 412 No. Dearborn St., Chicago, Ill.

Johnson Furnace Co., Kansas City, Mo.

E. W. Burbank Seed Co., 29 Free St., Portland, Me.

J. F. Conant, Railway Terminal Warehouse,  
Troy, N. Y.

Wilkes-Barre Hardware & Stove Co.

18-20 So. Washington St., Wilkes-Barre, Pa.

Moncrief Furnace Co., Atlanta, Ga.

Moncrief Furnace & Mfg. Co., Dallas, Texas



# MONCRIEF FURNACES



Published to Promote  
Better  
Warm Air Heating  
and  
Sheet Metal Work

Founded 1880

# American Artisan

and Hardware Record

## Sheet Metal Work-Warm Air Heating

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### ADVERTISING AND EDITORIAL STAFF

Etta Cohn  
J. F. Johnson

Franklin Butler  
Chas. E. Kennedy

G. J. Duerr  
Frank McElwain

Eastern Representatives: M. M. Dwinell, J. S. Lovingham, 156 Fifth Avenue, New York City

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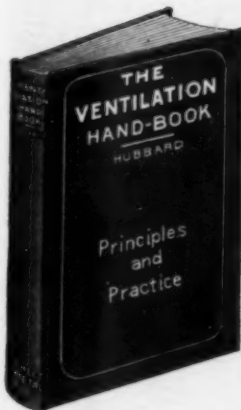
## Table of Contents

	Page		Page
Sheet Metal Department.....	55 to 67	J. H. Trego to Retire From National Association of Credit Men.....	67
Good Tools Versus Brittle Sheet Steel, by L. Broeml .....	55	Notes and Queries.....	67
Welding Pure Aluminum Sheet Coming Rapidly Into Vogue.....	58	Random Notes and Sketches, by Sidney Arnold	68
Pattern for 2-Way "Y" Branch for Warm Air Furnace Work, by O. W. Kothe, Principal St. Louis Technical Institute.....	62	Heating and Ventilating Department.....	69 to 75
Indiana Sheet Metal Contractors Secure Paul Jordan as Executive Secretary.....	64	Code Committee Answers Fan Question.....	69
Cooperative Campaign Inaugurated to Serve Sheet Metal Shops.....	64	Copy of New Building Code Passed by Kansas City Building Council.....	70
Taylor, Welder and Winfield Welding Companies Form Taylor-Winfield Corporation...	65	Warm Air Furnace Window Display That Produces Business .....	73
How the Profit is Being Squeezed Out of the Steel Business, by Charles F. Abbott, Institute of Steel Construction.....	66	District Court of U. S. in Western Pa. District Hands Important Decision.....	74
		Second Warm Air Furnace Fan School Closes With Elaborate Banquet.....	75
		Retail Hardware Doings.....	75
		Markets .....	76

### Readers, Attention!

*In this issue of AMERICAN ARTISAN there appears an article in answer to the question, "In what way will the addition of a fan to a Standard Furnace Code job improve the functioning of that job?" This answer is based upon the experience of practical men in the trade. It was compiled by Professor J. D. Hoffman, of Purdue University, and Chairman of the Code Committee, and includes the opinions on the subject of all of the members of the Code Committee. Getting this opinion is just one of the many services which AMERICAN ARTISAN is striving to render its readers.*

# THOUSANDS have perfected their training and increased their efficiency and earnings by reading these *easy-to-read* books on SHEET METAL WORK



## THE VENTILATION HANDBOOK

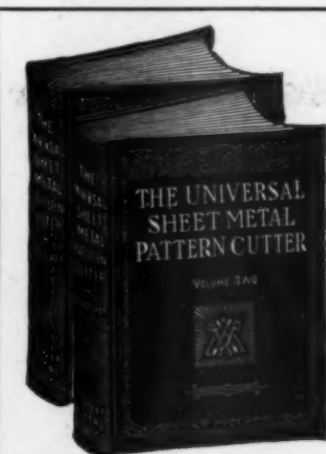
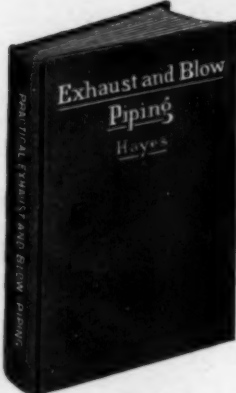
A PRACTICAL book designed to cover the principles and practice of ventilation as applied to furnace heating; ducts, flues and dampers for gravity heating; fans and fan work for ventilation and hot blast heating by means of a comprehensive series of questions, answers and very plain descriptions easy to understand. By Charles L. Hubbard.

Price.... **\$2.00**

## HAYES PRACTICAL EXHAUST AND BLOW PIPING

EXHAUST and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches, giving all necessary guidance in fan work blower and separator construction. 159 pages. 5 x 8. 51 figures. By Hayes. Cloth .....

**\$2.00**



## Every Sheet Metal worker should own this 2 Volume Encyclopedia of Sheet Metal Working

THE most practical and useful treatises on the subject.

Work of all the branches of the trade and the broadest scope of details are found—inside and outside work—small jobs and the most complicated are shown, explained and profusely illustrated.

The first volume deals with all types and kinds of inside small and large sheet metal work.

The second volume deals with the more advanced branches of sheet metal work, in fact is largely devoted to the architectural end of the business. It consists of 400 double column pages and is illustrated with 711 engravings showing all methods under treatment, as well as perspective views of the subjects of the patterns, and other demonstrations in their finished state. It includes drawing, full sized detailing and lettering, development and construction of all forms of sheet metal construction work.

The volumes are bound in heavy cloth and each measures 9x12 in. Each contains over 350 pages and 650 original drawings. Price each.....

**\$7.50**

## THE NEW METAL WORKER PATTERN BOOK

IT contains solutions of individual pattern problems in every department of sheet metal work, giving the complete methods of laying out all forms of work. It covers every detail from the selection of tools, through Linear and Geometrical Drawing, to development of Difficult Problems by Triangulation. This revised edition contains a series of automobile patterns. These include laying out guards, fenders, cowls, skirts, hoods, etc. It has 514 pages, 895 illustrations and diagrams, measures 9x12 inches and is cloth bound.

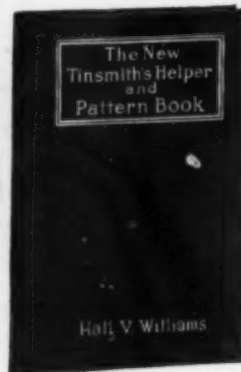
Price ..... **\$6.00**



## THE NEW TINSMITH'S HELPER AND PATTERN BOOK

A NEW edition of one of the most popular books on tin-smithing and elementary sheet metal work. The contents of this new edition are new excepting the chapter on Mensuration, which has been re-arranged and amplified, and possibly some fifty pages of problems and tables which are classified to the phase of the work they cover. This book covers simple geometry and every phase of modern pattern cutting, from the making of every type of Seam, Lap and Joint, to Conical Problems and Tinware, Elbows, Piping, Ducts, Gutters, Leaders, Cornice and Skylight Work and Furnace Fittings, 352 pages, 247 figures and 165 tables, flexible leather bound and measures 4 1/2 x 5 inches. By Hall V. Williams. Price.....

**\$3.00**

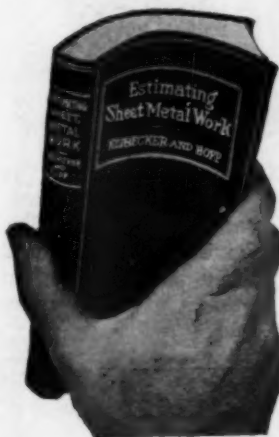


## ESSENTIALS OF SHEET METAL WORK AND PATTERN DRAFTING

A BOOK produced by the combined efforts of L. Broemel and the late Professor J. S. Daugherty, instructor in Sheet Metal Work at the Carnegie Institute of Technology. Pattern drafting is its biggest feature; not only tells how to make the pattern, but how to develop it with modern machines and tools; gives valuable assistance on soldering, brazing, welding, crimping, beading, straight, circular and ir-

regular cutting. Bound in leatherette; 500 pages; more than 400 pen drawings and illustrations. Price

**\$2.00**



## ESTIMATING SHEET METAL WORK

ANOTHER good book by Wm. Neubecker and A. Hopp. This is a new edition. A manual of practical self-instruction in the art of pattern drafting and construction work in light and heavy gauge metal, including skylights and roofing, cornice work, etc. 417 pages; 4 1/2 x 7 in.; 216 figures. Cloth. Price .....

**\$3.00**

### Books Wanted

AMERICAN ARTISAN, 620 S. Michigan Ave. Chicago, Ill.

For the enclosed \$..... send the books ordered and enter following subscription (or renewal.)

Name.....

Address.....

### NOTE

Deduct 10% from TOTAL amount of order when subscription is included with order for books.



Upper Left—Home in which a Patented XXth Century Overhead System of Heating was installed.

Upper Right—A ceiling register used in the Overhead System.

Right—A cross sectional view of the same home showing the operation of the patented XXth Century Overhead System of Heating.



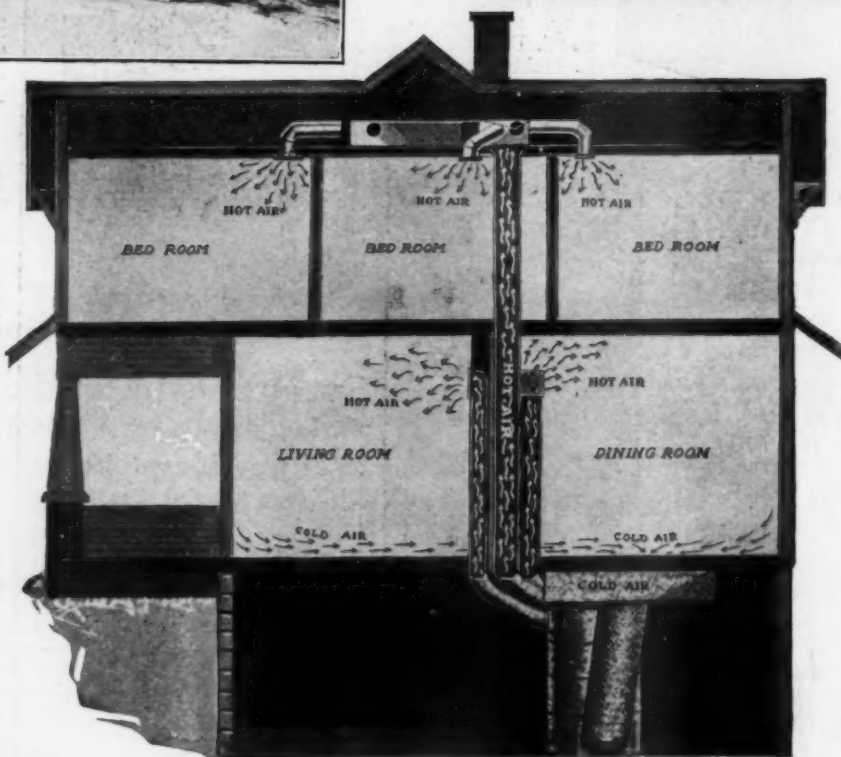
## An Ace in the Hole

**M**ANY homes are hard to heat by regular installation methods. Some rooms, far away from the furnace are often difficult to heat without using fans.

Here's where the dealer, with his Patented XXth Century Overhead System of Heating has an ace in the hole. Due to the natural greater heat velocity attained in the XXth Century Overhead System, rooms far away can be heated just as evenly as rooms close to the furnace.

Large roomy old homes, built 30 to 40 years ago, always difficult to heat, are now being heated by the XXth Century Overhead System for the first time. Long narrow bungalows practically demand a XXth Century Overhead System. So do the "shotgun" type of homes where the basement is only under one section and rooms not over the excavated section must be heated.

Dealers are very enthusiastic over the XXth Century Overhead System of Heating. They realize the advantage and prestige it gives them in making successful installations in homes of all types.



The XXth Century Overhead System is one of many exclusive dealer advantages. If you are not making progress with your present line, fill in the coupon below and get the XXth Century proposition. You will be surprised at the money making possibilities it offers.

The XXth Century H. & V. Co.  
Akron, Ohio

Without obligation please send me the XXth Century Proposition.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State





# American Artisan and Hardware Record



Vol. 94.

CHICAGO, JULY 9, 1927

No. 2.



Sheet Metal Training Shop of the Cincinnati Public Schools, Cincinnati, Ohio. Boys Are Trained Here to Use the Best Materials and Tools

## Good Tools Versus Brittle Sheet Steel a Matter of Importance

*Some Suggestions on the Proper  
Use of Tools to Avoid Breakage*

By L. BROEMEL\*

**T**HIS article offers an abstract in relation to a controversy with a prominent dealer who expressed a wish that this message be put in print for the benefit of his own sales organization as well as the ultimate consumer.

It was, therefore, decided to present this vital subject of the present-day tool problem for the information it might afford.

The tools discussed are the common tools and hand machines that play such an important part in the progress of the sheet metal shop.

\*Manager of sales machinery department, Peck, Stow & Wilcox Company.

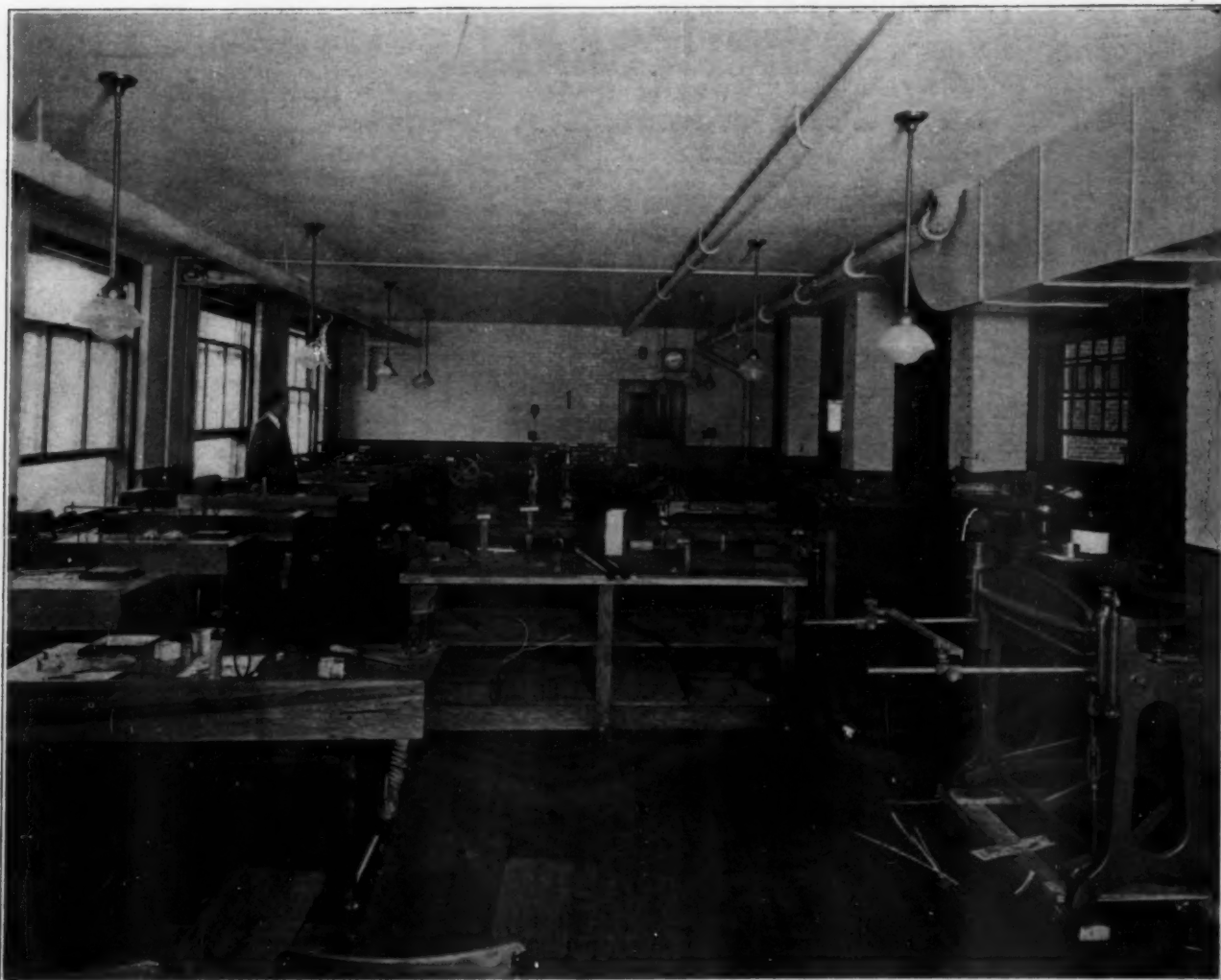
This narrative will not defend or condemn. Its purpose is to bring about, if possible, long life of the high grade tools for the sheet metal worker. It further attempts to offer a few facts that are no doubt largely responsible for the usual tool complaints as filed with the dealer and manufacturer direct.

What is said here, however, is not intended to discourage the consumer from airing his future defective tool claims as before, but to have him make first a careful analysis of all the conditions that may or may not have been responsible for the tool breakage before

condemning the tool and its maker.

So long as tools or machines are made in the furtherance of industrial progress, there will always be that paramount factor to be successfully dealt with; viz, the human element as it earlier enters into the rolling or the hammering of steel, the making of pig iron, and as it later so largely as an element is relied upon to mold, forge, machine, harden or temper and inspect the finished product for giving value for value.

From tools to automobiles through intensive supervision the manufacturer finds it to his own



Light, Well Arranged and Fully Equipped Sheet Metal Training Shop Where Boys of Worcester, Massachusetts, Junior High School Are Trained in the Sheet Metal Working Art

profit morally and materially to turn out as satisfactory a product as will hold down complaints relative to inferiority of workmanship and materials to the lowest possible minimum—however, the ideal cannot be attained for entire elimination of tool or machine complaints.

My listener as previously referred to replied to these assertions as follows:

"But my father, an old-time, retired and dyed-in-the-wool sheet metal worker has in his most cherished tool kit several tools that have seen years of constant use with comparatively little wear. In his day the life of a good tool was measured by years. A machine was still new after fifty years of service. He owns a hand grooving tool and a rivet set that years of constant use have worn down like a burnt match so the fingers could no longer

hold them; otherwise, they could do even more work. Whereas, to-day the life of tools for sheet metal work is measured by weeks or a few months at their best in some cases."

Well, I am going a little further and will add that many a good tool has been shot to pieces in much less than an hour—and when it happens the first thought of the user is to immediately connect with the fellow who sold the tool for claiming re-dress. In some cases a flaw or some other defect is evidenced and in the average case a hasty conclusion has been arrived at, for assuming that a good mechanic certainly knows how to use tools—the manufacturer must have fallen down again. At this point just let us slip back to years ago during the good old days of our mechanically instinctive grandfathers in the trade.

Those were the happy days for tool pride and contentment. But do not overlook the fact that charcoal tin plate, soft and pliable, was the common material used just as to-day galvanized iron, some good, bad or indifferent, is so largely distributed among the shops of our country.

Certainly your grandfather had fifty years of service out of a machine and it is fully well agreed that hand tools lasted for a time indefinite.

But listen! Ask your grandfather if he knew what galvanized iron was in his day, and did he ever think that No. 10 gauge iron would become as commonly used as he perhaps once used nothing but tin plate in his work.

The rivet set, the snip, the hammer, grooving tool, etc., are made in their respective sizes, weight and

general proportionment now as before.

These tools are made for a defined purpose and according to their kind and size, judgment must be used in their proper application in relation to the gauge and grade of iron used.

My friend asks—"If the better grade of galvanized iron is not as pliable as some of the heavy tin plates on which good tools should wear only after considerable time."

I want to lay a great deal of emphasis on the reference to *better grades of galvanized iron*.

Sheet steel merchants generally know that owing to the fabrication of some inferior sheet steel, tool breakages are alarmingly greater in proportion than during the days when real good soft iron, regardless of the gauge, was the rule and not the exception.

So let the tool user be fair with himself and to the tool manufacturer in connection with future tool breakages—giving all the conditions under which tools break or wear away easily fair consideration, taking into consideration the grade and kind of sheet steel used in that shop before criticising the tool manufacturer too severely.

Furthermore, using a one inch face setting hammer on a seaming operation, closing down several thicknesses of No. 14 gauge steel is not a fair test to measure the hardness and the good strength of a setting hammer as designed so light and tapered purposely for particular use. Heading heavy rivets in the same iron and using some of the brittle rivets as are being turned out by the maker and by pounding hard rivets with a light hammer does not call for condemnation of present-day tool quality.

Using one convenient size of snip regardless of the kind, grade or gauge of iron that comes into the shop is not a fair test of that snip's cutting qualities. Forcing a shallow grooved hand grooving tool to close down several thicknesses that are to make for a tight seam of eighteen gauge iron when the tool was designed for twenty-four gauge, surely it cannot be the maker's fault

when the groove turns over or breaks down under the strain.

An old-time sheet metal worker now conducting a large class in one of our vocational schools recently had occasion to feel alarmed over the early wear on shop tools, a condition that was not so plainly evident during his days of working at the trade in many shops throughout the country.

The writer had the good fortune to investigate this complaint, finding that this old-time advocate for quality, unfortunately could see no further than that some serious change must have taken place in tool making over the methods in vogue years ago.

In connection with a general sales talk on the steel situation this fellow came to think and volunteered that the sheet steel used in that shop was so brittle that a beading operation when performed on the beading machine, the rolls would cut the steel before making a depression in it as intended. He was obliged, however, to use whatever the school board purchased and was making the best of it. He was also acquainted with sheet steel, or call it iron if you will, that was so pliable and could be shaped with the bare hands—the kind of steel that would have greatly served to prolong the life of his tools.

But, up until the time of the discussion this mechanic, like a great many others, could not see the inferiority of the material being used and the superiority of the tools that were holding up, for a time at least, under the gruelling test of severe pressure.

Multiplying this illustration, we are able to partly explain why tools of our present day are short lived and this condition will not find relief before the grade and brand of sheet steel as used in some shops are changed for bringing about better tool satisfaction. Otherwise, special tools should be made for utilizing sheet steel so spotted with carbon that it does not easily give way to standard tools of unusually good quality.

This non-resisting material may

have been erroneously referred to as inferior while it can be proven that it is not at all inferior for the job. But the point we have endeavored to bring out here is that if brittle sheet steel must be used, pay the price for machine and tool dissatisfaction, extremely early wear and frequent breakages must be expected to develop.

It is not the purpose of this article to criticise any sheet steel maker's product nor to dictate to the sheet metal worker what kind and brand of sheet steel he must use for adding satisfactory service and long life to the shop tools. It is fair, however, to ask on the filing of tool claims that a sample piece of the steel used be submitted for analysis to determine the strength and hardness of the tool claimed defective against the possible brittleness or the extreme thickness of the steel used as not desirable for the kind of tool complained of. Our sensitive instruments nine times out of ten will condemn the steel as inferior not perhaps for the purpose that this sheet steel might have been utilized but as a tool record of conditions as they are.

I am not concerned with what sheet steel mills claim in connection with disposition of their large tonnage of "wasters," but it is apparent that this material is not going into advertising sign boards exclusively. And there are standard grades of so called galvanized iron that are on a par with some "wasters" when attempting to cut, shape and form those sheets into something of general usefulness with available standard tools of good quality.

If a dealer is selling any of the high-grade sheet steels that have demonstrated their favorable action and not their re-action against the tools used on them, the facts contained herein might be capitalized upon and thereby spreading education and insisting upon the use of more good iron that will pay the shop owner dividends on greatly valuable tools and machines that might be saved annually against a known common abuse.



# Welding Pure Aluminum Sheet Coming Rapidly Into Vogue

*Opens New Possibilities for Use of Acetylene Blow Pipe*

**W**ITH the popularity of non-ferrous metals for a multitude of modern industrial uses comes the problem of fabricating these with a satisfactorily tight and strong joint. Commercially pure aluminum is one of the most important metals in this group, and so demands consideration from everyone who uses it either for special purposes or in routine production of modern plant equipment.

Of course oxwelding is employed to give permanent tightness at the seams in equipment made of aluminum. It is not easy to fabri-

cate aluminum sheet by riveting because aluminum rivets stretch easily, and because the sheet itself should not be weakened with rivet holes. These difficulties are in addition to the usual disadvantages of riveted joints, especially in equipment for processes where extraordinary demands are made upon the seams with regard to the qualities of tightness and corrosion resistance.

It might be well to note at this point the fact that some of the things outlined in this article which correctly apply to commercially pure aluminum (99%+aluminum) do

not apply to aluminum alloys which, as far as the process of welding is concerned at least, demand separate consideration.

Approximate strength of the original material is frequently demanded in fabricated sheet aluminum. An outstanding example of articles subjected to such service are the variety of tanks used in aircraft. These must of necessity be light, must conform to space limitations, must be absolutely tight under adverse conditions, and must be strong. That oxwelding fulfills all these requirements is strikingly illustrated by the fact that practically every aluminum airplane tank manufactured in America is built with oxwelded seams.

The welding of sheet aluminum is not difficult, but it requires some knowledge and experience on the part of the operator to produce uniformly good welds day in and day out under varying conditions. An operator, even though experienced on steel and cast iron, who is attempting to weld aluminum sheet for the first time, should certainly obtain some of this material and make practice welds which he can test to destruction. Thoroughly satisfactory results on sample pieces should be obtained before undertaking important work.

Welding practices and the general methods of preparing material for welding vary little for aluminum sheet and light plate up to about  $\frac{3}{8}$  in. thick; except for the usual provisions for handling very light gauge material.

Of utmost importance in this work is selection of the proper material for welding. In general, sheet aluminum differs from the cast metal in composition, the latter being alloys containing important percentages of other metals, while the rolled material is pure aluminum, 99

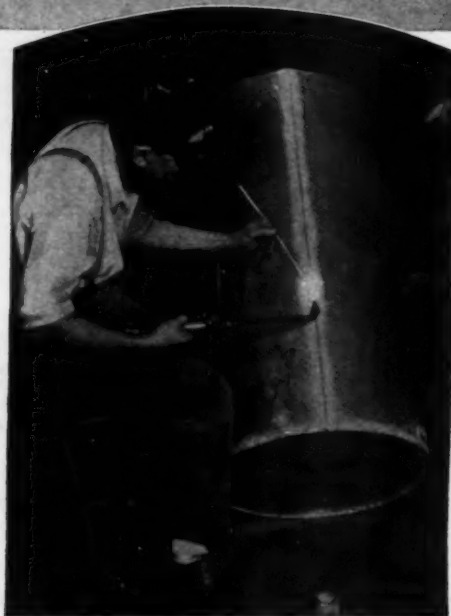


Fig. 1 (Above)—The Blowpipe Head Should Be at an Angle of 30 Deg. to the Sheet Surface

Fig. 2 (Below)—Notice Position of the Blowpipe

per cent pure or better. This difference demands a different welding technique; and welding rods prepared for welding cast aluminum

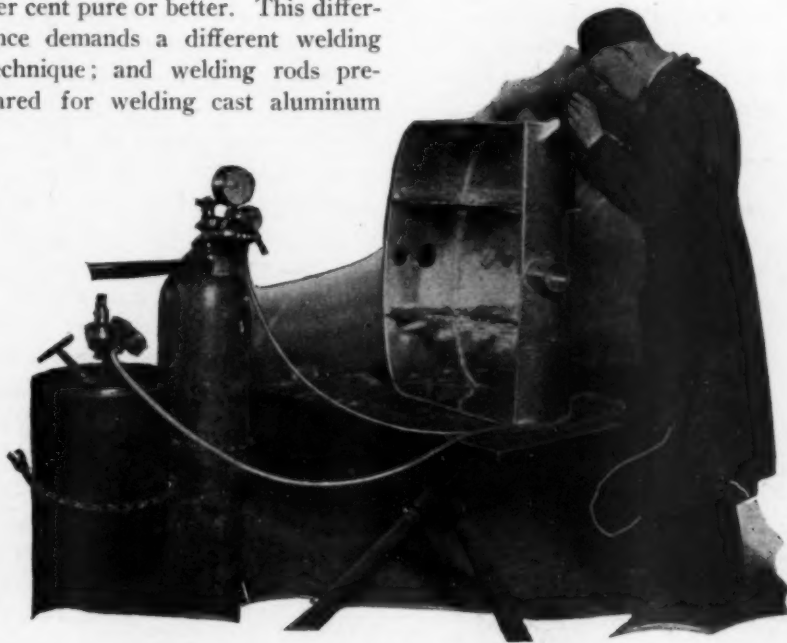


Fig. 3—Welding an Airplane Tank

are not suitable for pure aluminum sheet.

In addition to this, aluminum sheet and plate is made in a number of grades and tempers; these varying considerably in physical properties and weldability. As an example, 16-ga. sheet of one grade varies in tensile strength from 18,000 lb. per sq. in. to 37,400 lb. over the temper range from "0" to "Hard." On the other hand, ductility of the same material (which varies inversely with the tensile strength) ranges from 26 per cent elongation to 4 per cent. Brinell hardness shows a variation from 32 to 66. It is therefore suggested that those contemplating production work in aluminum obtain the recommendation of the manufacturer of the sheet before ordering the material. These people will be glad to advise on the proper grade, temper and thickness of sheet or plate if given some details about the design of the product.

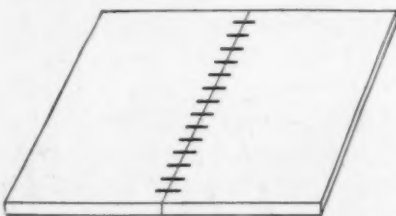


Fig. 4—Light Plate Prepared for Welding by Notching

Where castings for outlet connection, manhole flanges and other purposes are to be welded to sheet

or plate, pure aluminum castings should be purchased. These will be nearer the composition of the sheet, and can be welded into place with drawn aluminum welding rod and sheet aluminum flux.

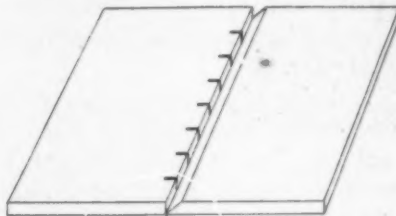


Fig. 5—One Edge Notched, the Other Bevelled at 45 Deg.

Aluminum differs from most metals in that it does not change color through its entire heat range. That is, it does not become red hot, but maintains its characteristic silvery white color even in the fluid state. The metal oxidizes very rapidly, and the resulting oxide has a melting point much higher than the melting point of aluminum metal. The oxide is also lighter than the metal itself, and consequently forms on the outside of the weld in a heavy, thick skin. This oxide coating is removed from aluminum sheet by means of a proper flux when it becomes so heavy as to interfere with welding.

Aluminum, like copper, has a very high rate of thermal conductivity, and consequently the heat of welding is rapidly absorbed by the metal near the weld. This makes it desirable to support carefully all parts adjacent to the weld that are likely

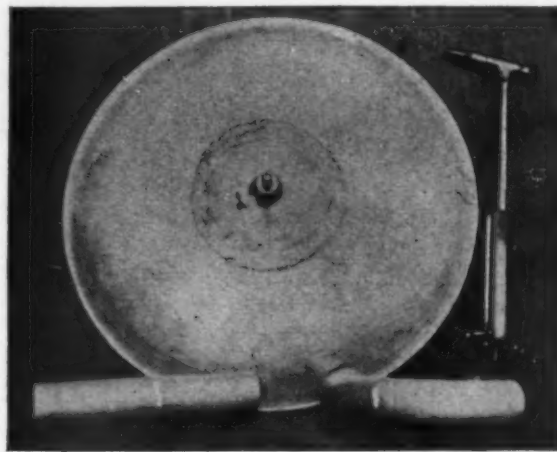


Figure 7

to become rapidly heated, and to complete the weld as quickly as is consistent with good workmanship, using a flame of minimum size.

Proper flux and welding rods are of the utmost importance. A flux



Fig. 6—Light Sheet Flanged the Thickness of Sheet

is necessary to control the oxidation of the metal described in the foregoing paragraph so a sound weld can be made. It is desirable to use

roducing required quantities of flux into the weld. In some shops a flux container is made by welding a piece of 3-in. pipe to a base plate, the

as deep as the thickness of the material, and are made as close as  $\frac{1}{4}$  in. apart in  $\frac{1}{8}$ -in. material. The edges are butted close together.

With the sheet or plate so notched, it is easier to obtain full penetration. The flux works down for the full thickness of the material, and considerable welding rod is saved. There is less chance of "burning through" and the notches act also as little expansion joints, preventing undue local distortion.

In  $\frac{1}{4}$ -in. and  $\frac{3}{8}$ -in. material, one of the abutting edges can be notched this way, while the other is beveled 45 deg. as shown in Fig. 5. This design has the advantages of the one just described; at the same time it is practicable for heavier material.

In all of this work the assembly of parts before welding should be gone about as in welding steel sheet of the same thickness. Long seams will require spacing at the far end, or they may demand tack welding or the use of jigs to hold the edges in proper relative positions. For welding very light metal prepared by flanging, spring clips are often used. H-clamps of one kind or another are usually a great aid to the operator on material which is to be



Figure 8

the best quality rods that are obtainable because rods formulated exclusively for welding are planned and made with a full knowledge of welding requirements and are designed to give correct composition of metal *in the weld*. A few cents extra paid for good aluminum welding rods are well invested in insurance against unsatisfactory results.

Where emergency work must be done before welding rods can be delivered it may be possible to do an acceptable job with strips cut from the sheet to be welded. The practice of using such material, however, is to be discouraged. It is undesirable under any conditions to use ordinary aluminum wire as welding rod because of the variation in composition to be found in material of this class.

Good flux is also important, probably more so in aluminum welding than in work on any other metal.

Most aluminum fluxes are sold as a thick paste or powder. These are then mixed with water to a free-flowing consistency and applied with a brush to the welding rod. Where no welding rod is being used, flux is ordinarily brushed on the edges of the sheet.

There are other methods for in-

pipe being about the same length as the welding rods. This container is kept filled up to within an inch of the top with a flux and water solution, and the supply of welding rods is kept in this. Sufficient flux will cling to the rods when withdrawn for use.

Light aluminum sheet (about 16-ga. and lighter) is usually flanged in preparation for welding. The flange should be about the same height as the thickness of the sheet or just a little higher. The joint is made by holding the two upstanding edges together and melting these down. For such work as this no welding rod is required.

Heavier sheet and light plate can be welded with a plain butt weld. Beveling is unnecessary for light plate. Welding rod can be used if it is desirable to reinforce the weld. In some instances it can be dispensed with entirely. Thicker sections can be bevelled as is usual with steel plate.

A design of joint which has many advantages is sketched in Figs. 4 and 5. The essential feature is notching the edges at intervals. In sheet  $\frac{1}{8}$  in. thick and heavier, the edges are cut through the entire thickness. These notches are about

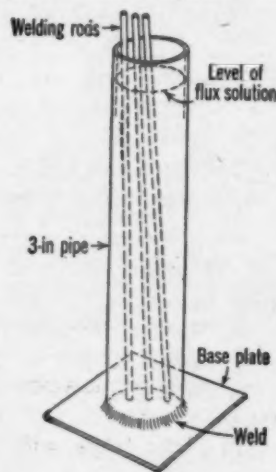


Figure 9

butt-welded with or without beveling.

Use of heavy bars or rails along the edges of the sheet to help reduce the heat effect is recommended for some classes of work. Where work is done in production, careful study of the matter of design and construction of jigs and fixtures will



well repay the effort and expense involved.

While it is probably desirable to prevent undue distortion in welding aluminum, this is really not a serious matter. A good weld in aluminum sheet will be as ductile as the sheet itself, so if the finished object is slightly distorted it can readily be reshaped by hammering after welding is completed.



Fig. 10—Automobile Bodies Are Often Built of Welded Aluminum Sheet

When material of good welding quality has been provided and the operator is supplied with welding rods and flux of proper quality and composition, and when the joint has been properly designed and set up for welding, the technique of actual blow-pipe manipulation becomes the matter upon which the success of the weld depends.

For welding sheet aluminum the blowpipe should be carefully adjusted to show a neutral flame, as this gives the best speed and economy.

Keep the blowpipe at an angle of about 30 deg. to the surface of the sheet. This will prevent rapid melting of the metal in a restricted area, and will thus avoid welding holes through the sheet. Holding the blowpipe at this angle will envelop the metal well ahead of the point of welding with the outer cone of the blowpipe flame and so will make welding progress more rapidly. The operator should be careful, of course, that the weld penetrates the full thickness of the sheet, but should avoid stopping the blowpipe in any one position for a sufficient length of time to melt holes through the sheet.

Watch the metal carefully for signs of melting, and fuse the weld metal thoroughly with molten metal from the sheet. It is not possible to determine the melting point solely by the color, because, as mentioned before, aluminum does not change color. An operator will quickly learn to recognize the proper time to add weld metal.

A skin of aluminum oxide will

quickly form on the melting metal. When this film becomes so thick that it interferes with welding, apply extra flux.

Completed welds are sometimes washed with a 10 per cent solution of sulphuric or hydrochloric acid to remove all trace of excess flux. After this treatment, welds should be scrubbed in large volumes of warm water to remove any of this acid solution that might be left.

Another method of flux removal consists of thoroughly washing the article in hot, soapy water, followed by a thorough hot rinse. Where the weld is later to be dressed down and painted, a steam jet can be used to advantage. Sometimes little pockets of flux are entrapped during welding, and these are difficult to eliminate by washing. The force of the steam jet, however, is sufficient to remove the entrapped flux.

#### John Fitch & Son Find Artisan Want Ads Get Results for Them To AMERICAN ARTISAN:

Please discontinue my advertisement. You surely do bring results.

Yours very truly,

JOHN FITCH & SON.

Millersburg, Ohio.

#### Michigan Summer Outing Has Been Set at August 18 and 19

The Michigan Sheet Metal & Roofing Contractors' Association has announced August 18 and 19 as the dates set for its annual outing this year.

A committee consisting of A. J. Berschbach, Sr., Tony Reis, Wm. Busch, and State Secretary F. E. Ederle, made a trip on Tuesday, June 28, to St. Clair Flats for the purpose of making arrangements for the state summer outing.

After careful consideration of several summer hotels the committee decided to select the Hotel Miller. This being the only place large enough to accommodate the expected attendance. The committee made a report at the luncheon meeting of the Detroit Association on Thursday and it was decided that the dates be Thursday and Friday, August 18th and 19th.

Miller's Hotel is about a two-hour ride by boat from Detroit and is situated on one of the most beautiful islands of the St. Clair Flats.

Complete details of the trip will be announced later. This much can now be definitely stated, that Detroit purposes to make this the greatest outing ever held by the Michigan Association.

#### What to Look For in Forthcoming Issues of AMERICAN ARTISAN

Watch for the forthcoming issues of AMERICAN ARTISAN. They will contain articles on how to sell sheet metal roofing, how one furnace installer found the key to the home owner's cellar to be cleaning furnaces, how many warm air furnace installers have seen fit to remodel their windows and sales rooms. Do not miss these issues.

#### Retail Hardware Doings

##### Arkansas

The Rankin Hardware Store, Walnut Ridge, has opened for business.

##### Minnesota

E. M. Meyer has purchased a half interest in the hardware business of C. H. Casey, Jordan.

# Pattern for 2-Way "Y" Branch for Warm Air Furnace Work

*Problem Is Worked Out in Answer to Inquiry of Subscriber*

By O. W. KOTHE, Principal St. Louis Technical Institute

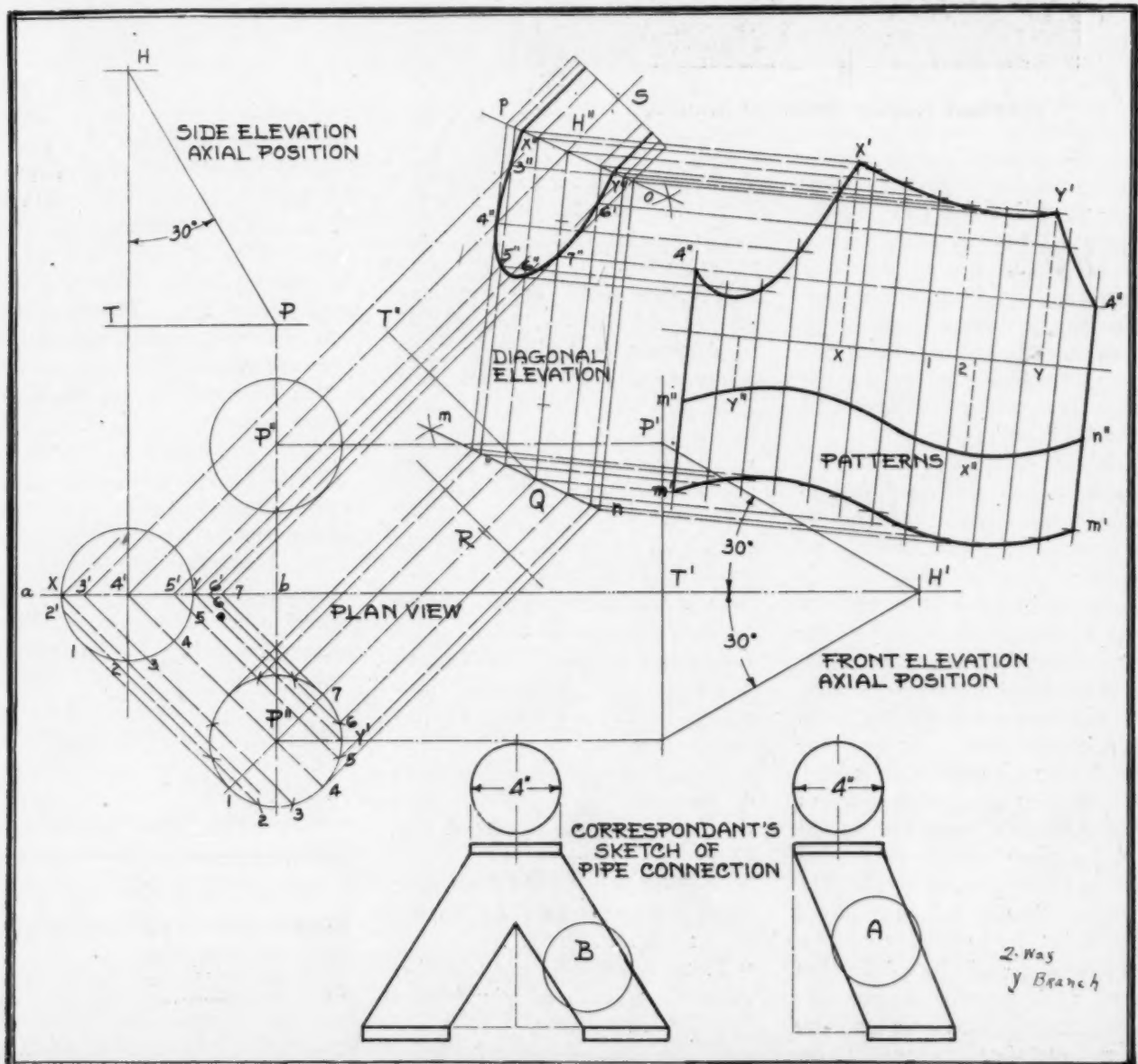
**R**ESPONDING to an inquiry, where the correspondent sends a sketch as indicated at the bottom of our engraving. He mentions of not knowing how to provide against the pipe shrinking in the throat—when the top and bottom basis are parallel.

We have placed the sections A and B in the side and front elevation of the correspondent's sketch

to show the difference in shrinkage between each view, and also which correspond with the normal sections, 4 inches in diameter. Now this difference comes in at the inclination of the branches from a horizontal base line. As the pipe is supposed to be of 4 inches in diameter; then to cut off the bottom or top ends to join a square cut collar—it will be found this opening will be too

large, due to the miter line you have cut. There are only two ways of remedying this problem—the one is to use miter line angles as at S-H'' and Q-R of the diagonal view, or to use Triangulation.

You can dispense with the angle collars; if you have a large quantity to make, where you desire to use the straight collars; but then you must develop this problem by tri-



Patterns for a Two Way "Y" Branch

angulation so the bottom and top sections will make your 4 inch circles, and let the central portion of the pipe work out as it will. But with the parallel line method of projection, we must use a normal section as your 4 inch section, and then develop angles and miter lines so all edges match up perfectly.

To develop this problem, we first draw the side elevation axis as H-T-P; making it any altitude or offset you desire, which gives the axis H-P. Next drop vertical lines for developing the plan view, and at any convenient place as 4' draw a horizontal line indefinitely. If you do not know the exact spread of the prongs in plan, it is well to draw an axial front elevation; where H'-T' is the height, and T'-P' is the spread of one prong. Carry this point P' horizontally to cross the vertical line P from side elevation which establishes points P''-P''. In this case, the spread of each prong in plan works out to a 45 degree angle, and this makes it convenient for the use of a 45 deg. triangle.

Next describe the normal sections about 4' and P'', and divide the section P'' in say 12 equal parts, or 6 for the semi-circle. Now from each point in the section P'' project lines parallel with the axis to intersect the one side of the circle 4' and the horizontal miter a-b as in points 3'-4'-5', etc. Also observe because of the forward inclination of the prongs the points extend in the horizontal miter as 6'-7-6-y'. Also notice, no line from P'' intersects the horizontal miter with the circle 4' in points x and y'. So from these points we bring lines back to P'' as x' and y'.

Now since both the side elevation and plan are in a fore-shortened position—we must develop a diagonal position showing the true view of the prong straightened out. Therefore square a line out from 4' as 4'-S square to the plan axis 4'-4. Now from P'' square a line out as P''-Q, and at any point draw the line T''-Q so it is parallel to 4'-P'' of plan. Then measure up the side elevation altitude H-T as T''-H'', and draw the diagonal line H''-Q. Next bisect the angles for

the miters m-n and o-p and then project your plan lines into this diagonal elevation.

Then from x-3'-4'-5'-6'-7-8'-y' square pot lines to cross the diagonal elevation lines in points x''-3''-4''-5''-6'', etc and this establishes the throat miter between the branches and finishes the working drawing for developing the patterns. In setting out the pattern, first draw a line square to H''-Q of diagonal elevation, and then pick the girth spaces from section P'' of plan and transferring them on the stretchout line. Draw stretchout lines, and then place the high points x and y in their correct position to correspond

with section P''. After this develop the miter lines 4''-x'-y'-4'', as well as the lower miter m'-m' in the usual way. The main thing is to watch your points and lines carefully.

The pattern for the lower angle Q-R can be developed the same as for any elbow angle. While the top angle S-H'' is the same—still a part of it must be cut off as the lines x'' and y'' show. The distance in between these points x''-y'' will fit around the plan top circle 4' along points x-2'-1-2-3-4-5-y'. When this is done, and all necessary laps are allowed the patterns are finished and can be cut out for assembling.

*This is one of seven questions which should be asked of any roofing material before it is chosen*



#### Question No. 2

*"Is Follansbee Forge Best Roofing proof against the destructive winds that so frequently blow in under the roof and damage it?"*

#### Answer:

Follansbee Forge Best Roofing insures a roof that is wind-proof because there is no way in which the wind can get under the roof as it does with most shingle and tile roofs. It frees you of the worry from damaging storms—of flying slates or shingles or tiles which are a dangerous menace as well as a costly damage to repair. You can sit cheerfully in the house and let the storm rage if you have a roof made from Follansbee Forge Best Roofing sheets—and your roof will be beautiful, tidy, and whole after the storm.

**BIERSACH & NIEDERMAYER CO.,**

220 Fifth Street

MILWAUKEE, WIS.

**THE INSTINCT FOR QUALITY IS A PRICELESS INHERITANCE**

One of the Blotters with Which Biersach & Niedermeyer Company, Milwaukee, Use in Their Circularization Work

#### Sheet Metal Protects Old Glory from Maurauding Thieves

Chicago papers of July 5th carried the following news item under a Washington, D. C., date line, showing how one man found sheet metal of service to him:

"Theft of two American flags from in front of his home today caused Louis Giclas, retired sheet metal worker, to take heroic measures to make his premises assume the patriotic aspect they have had for the last thirty years on July 4th. Giclas painted an American flag on a huge piece of sheet metal and nailed the metal across the front of his premises, with the following warning:

"Try to take this one!"

"Mr. Giclas said his hobby was the furtherance of patriotic ideals and that he had given away hundreds of copies of the Declaration of Independence, which is sold at the government printing office for 15 cents the copy, but that the bold theft of his finest American flags was beyond his ken."

#### Reliable Sheet Metal & Roofing, Miami, Fla., Incorporate for \$70,000

Reliable Sheet Metal & Roofing Works, Inc., Miami, Florida, has been incorporated with \$70,000 capital by Charles Ress, Seybold Building. Harry Rabkow is the incorporator.



## Indiana Sheet Metal Contractors Secure Paul Jordan as Executive Secretary

*Will Maintain Central Office at 631 South Delaware Street, Indianapolis*

THE officers and directors of the Sheet Metal Contractors' Association of Indiana have closed a contract by which they have secured the services of Paul R. Jordan in the capacity of executive secretary and by which they will maintain a central office at 631 South Delaware Street, Indianapolis. This accomplishment was perfected at a meeting of the Board of Directors in Indianapolis June 25. Present at the meeting were President W. S. Waters, Vice-President Elmer Livesey, Charles Roland, Homer Selch, W. A. Brown, O. Voorhees and Executive Secretary Paul R. Jordan.

Mr. Jordan, in addition to handling the details of the management of the central office, will act as field secretary, helping sheet metal contractors around the state to organize into local associations and to stimulate interest in both local and state organizations generally.

In this work he will have the cooperation of the best element among sheet metal contractors, jobbers and manufacturers, both large and small, not only those who are now serving as officers and directors of the association, but of many others who are interested and who have announced their approval of a central office plan and their intention to co-operate in its successful operation.

The state association has been as active in the past as voluntary effort could make it, but has felt the need of the services of an executive whose business it was to look after the affairs of the organization and see that they were properly attended to. Those interested in its welfare have noted many ways of serving its membership which could not be taken advantage of for lack of constructive organization to put them into effect. It has been recognized

for some time past that the opening up of a central office and the employment of an executive secretary offered the only feasible means of conducting the association on the high plane of service to its membership and to the public at large, which is the desire of its well wishers.

This step was decided upon at the 1927 convention last spring when the membership in convention assembled put themselves on record as

favoring the move and selected O. Voorhees and President Waters to perfect such an arrangement. The details have been carefully thrashed out in a series of meetings, and the final draft, which was presented to the board, was unanimously approved. The contract is drawn with a view to permanency of the arrangement and it is thought by all concerned that the Indiana association is entering upon a new era of unprecedented scope and activity.

## Coöperative Campaign Inaugurated to Serve Sheet Metal Shops

*Name of Body Is Armco Distributors' Association of America*

A N IMPORTANT step forward in distributor service is the announcement of a coöperative advertising plan by the Armco Distributors' Association of America. The chief purpose of this campaign is to serve the sheet metal shop by suggesting ideas and methods, and offering advertising and selling helps.

This is the first time that a group of metal jobbers have ever joined together for the promotion of sheet iron. Such a movement is considered to be of tremendous significance to sheet metal workers as well as to everyone connected with the sheet metal industry.

The campaign, which begins about July 1st, will include consistent advertising in sheet metal papers, and the publication of the *Ingot Iron Shop News*. This publication has been and will continue to be a medium for exchanging ideas and coöperation among sheet metal shops.

The Armco Distributors' Association of America was organized about three years ago "to provide a means for the interchange of ex-

perience and ideas, to discuss mutual problems and for the betterment of product and trade practices." The work of the association has resulted in a great many new developments.

Several times a year there is a meeting of the board of directors of this association for the discussion of vital problems. The board of directors is composed of the following: A. W. Howe, The J. M. & L. A. Osborn Co., Cleveland, president; J. C. Specht, California Cornice Works, Los Angeles, vice-president; D. S. Gaston, Follansbee Bros., Pittsburgh, secretary-treasurer. Directors: G. P. Bible, Horace T. Potts Company, Philadelphia; F. O. Schoedinger, Columbus; L. T. Boyd, Orleans Steel Products Company, New Orleans; Quincy W. Wales, Brown-Wales Company, Boston.

This campaign will represent the combined efforts of the management and salesmen of the following forty-six firms, who are members of this association:

James Ackroyd & Sons, Albany, N. Y.  
Albany Steel & Iron Supply Co., Albany, N. Y.

Arnold & Co., Baltimore, Md.  
 Robert W. Bartram, Montreal, Quebec, Canada.  
 Berger Brothers, Philadelphia, Pa.  
 The Blodgett & Clapp Co., Hartford, Conn.  
 The Braden Manufacturing Co., Terre Haute, Ind.  
 Brown-Wales Co., Boston, Mass.  
 California Cornice Works, Los Angeles, Calif.  
 Ceco Steel & Wire Co., Omaha, Neb.  
 Chapin & Bangs, Bridgeport, Conn.  
 James A. Coe & Co., Newark, N. J.  
 Conklin Tin Plate & Metal Co., Atlanta, Ga.  
 The Congdon Carpenter Co., Providence, R. I.  
 The Conner Manufacturing Co., Louisville, Ky.  
 E. Corey & Co., Portland, Me.  
 Demmler Brothers Co., Pittsburgh, Pa.  
 Ferdinand Dieckmann Co., Cincinnati, Ohio.  
 Farwell, Ozmun, Kirk & Co., St. Paul, Minn.  
 Follansbee Brothers Co., Pittsburgh, Pa.  
 Gordon Metal Co., Richmond, Va.  
 Hammond Sheet Metal Co., St. Louis, Mo.  
 Holbrook, Merrill & Stetson, San Francisco, Calif.  
 Jacobs & Gile, Portland, Ore.

F. H. Lawson Co., Cincinnati, O.  
 David Lupton's Sons Co., Philadelphia, Pa.  
 Merchant & Evans Co., Philadelphia, Pa.  
 Mapes & Sprowl Steel Co., Newark, N. J.  
 McClure-Johnston Co., Pittsburgh, Pa.  
 McLennan McFeeley & Co., Ltd., Vancouver, B. C., Canada.  
 The C. S. Mersick Co., New Haven, Conn.  
 Milwaukee Corrugating Co., Milwaukee, Wis.  
 Moncrief-Lenoir Mfg. Co., Houston, Texas.  
 Orleans Steel Products Co., New Orleans, La.  
 J. M. & L. A. Osborn Co., Cleveland, Ohio.  
 Peden Iron & Steel Co., Houston, Tex.  
 Pidgeon-Thomas Iron Co., Memphis, Tenn.  
 H. T. Potts Co., Philadelphia, Pa.  
 W. F. Potts, Son & Co., Inc., Philadelphia, Pa.  
 Republic Metalware Co., Buffalo, N. Y.  
 Richards & Co., Boston, Mass.  
 F. O. Schoedinger, Columbus, Ohio.  
 The Standard Metal Co., Indianapolis, Ind.  
 Strevell, Paterson Hardware Co., Salt Lake City, Utah.  
 Henry Weyand, Waterbury, Conn.  
 York Corrugating Co., York, Pa.

greatly facilitates receiving and shipping their products. Last year it was found necessary to add to plant facilities and another addition is now being erected.

Prior to the introduction of this machine, all such welders were leased on a royalty basis and the Taylor invention was the first butt welder to be sold outright. The Winfield Company placed Mr. Taylor's machine on the market and won almost instant national recognition. Shortly thereafter, Mr. Taylor designed and offered for sale the first spot welding machine in this country. In 1910 and 1911 Mr. Taylor invented additional mechanical features for these machines.

It is interesting to note that Mr. Taylor has been granted over twenty-five patents on methods, processes and mechanical features for welding and has several important applications pending in the patent office at this time on further improvements in this field.

The Taylor Welder Company was incorporated in 1917, the patent granted to A. C. Taylor on a new method of spot welding, which method was not an infringement of the so-called Harmatta Patent. At this time the Harmatta Patent was in the process of litigation, but eventually the United States Supreme Court decided that this patent was invalid, due to lack of invention, and The Taylor Welder Company, as well as other companies, were free to use the Harmatta method and this, in addition to the Taylor process, resulted in Taylor spot welders becoming standard welding machines throughout American industry.

Offices of the company are located in various centers, such as New York, Philadelphia, Chicago, Detroit, Cleveland, St. Louis and Canada, representatives being: Denton and Anderson at Chicago, Cleveland, Detroit and St. Louis, O. S. Hamming at New York, H. M. Reynolds & Co. at Philadelphia, covering Pennsylvania, E. A. Wilcox at Los Angeles and San Francisco, and A. R. Williams Co., Ltd., Toronto, covering Canada.

## Taylor Welder and Winfield Welding Companies Form Taylor-Winfield Corp.

*Company to Build Large Plant—Albertis C. Taylor President and General Manager*

**A**NNOUNCEMENT is made that, effective July 1st, The Taylor Welder Company, The Winfield Electric Welding Machine Company and The Winfield Manufacturing Company, located on Atlantic Street, Warren, Ohio, will be merged into one corporation, under the name of The Taylor-Winfield Corporation, with combined assets of over \$350,000.

Officers of the company are Albertis C. Taylor, president and general manager; G. P. Gillmer, vice-president; J. H. Ewalt, treasurer, and N. H. Cobb, secretary. Directors are A. C. Taylor, L. Jennings, Fred W. Platt, N. H. Cobb, J. H. Ewalt, G. P. Gillmer, W. A. Wilson and W. A. Jones.

Work is already under way on the construction of a modern fire-proof addition to the present plant, which will more than double the capacity.

In this new daylight plant special

attention has been paid to labor-saving and production equipment, with every facility as well for the employes' welfare. Plans are also being drawn for a new office building of modern brick construction.

The history of the founding of this concern reads like a romance of modern-day business. In 1903 Albertis C. Taylor designed and perfected an electric butt welding machine while in the employ of The Winfield Manufacturing Company, a company originally founded for the manufacture of oil cans, established in 1881, incorporated in 1888 and one of Warren's oldest industries and today still a leader in its field. It was soon found necessary to provide larger quarters for the increased welding business and the company then purchased the entire acreage and buildings of the Warren Sheet Metal Company, Warren, Ohio. In this way the company has two private side tracks which



# How the Profit Is Being Squeezed Out of the Steel Business

## A Discussion of the Cause With a Suggestion for Remedying the Situation

By CHARLES F. ABBOTT, Institute of Steel Construction

(Continued from a Recent Issue)

Perhaps no industry suffered so much from outside competition as did the wall paper manufacturers. Wall paper was not only maligned by the makers of competing materials, but it was also thoroughly neglected by the consumer. The efforts of the Wall Paper Manufacturers' Association have completely changed this condition. It has brought prosperity to the industry.

There are many things which an association can do besides build markets. In some cases advertising helps to accomplish these other things. For instance, it enabled the National Knitted Outerwear Association to standardize its product. Incidentally the business of the industry jumped in four years from \$300,000,000 to be \$600,000,000.

Advertising made it possible for the full-fashioned hosiery manufacturers to explain to the public the significance of the term "full fashioned."

The same force was used by the American Malleable Casting Association to warn buyers of castings against imitation castings. It also told them how they could detect the imitations.

The Rubber Association of America used advertising to tackle the problem of trade abuses. Numerous other examples of this sort are mentioned by Professor Agnew.

The American Institute of Steel Construction was organized for much the same reason that these other associations were organized—that is, to combat outside competition. Our problem is that of the market. The use of steel has not increased as might have been the case. The public have been educated to use substitutes that neither possess the merit nor the permanency that steel affords. There are

many instances where steel could be used profitably yet these uses will never just happen. *Plans must be developed that will create interest and win public acceptance.*

Efficiency in production and finance are the result of painstaking effort calling for investment of time and money. The market requires just as much attention and it responds with greater returns and assurances of better business conditions.

But the steel industry has been making great progress since we recognized our problems four years ago and organized the American Institute of Steel Construction. The purpose of the Institute, as stated in its By-laws, is:

"The purpose of this organization shall be to promote the general improvement of the industry of fabricating, selling and erecting of structural steel and iron; to promote the growth of the industry through expansion of its possibilities and by procuring a wider market for its products; to reform abuses in the industry; to collect and disseminate information concerning matters of interest, so that those engaged therein may conduct their business more intelligently; to procure uniformity in the customs and usages of the trade.

"This organization shall not in any way whatsoever advise concerning, or discuss or interfere in the relations between employers and employees, nor shall it in any way deal with the fixing of prices; nor shall it foster or create, either directly or indirectly, any agreement, resolution or trade custom tending to a combination in restraint of trade.

"The Institute may be prepared to act in an advisory capacity to local associations in connection with carrying out and putting into operation the program of the Institute, but it shall not in any way assume or be responsible for the acts, resolutions or activities of any local or other association in the structural steel industry."

While it can be seen from this that marketing is the main function of the organization, its principal endeavor is along three main lines:

1. Standardization to eliminate waste in production and to promote the most efficient use of the product.
2. Research to develop new uses for the product and new markets.
3. Creation of a public consciousness of the advantage of the product.

The ills which the structural steel industry has been suffering for years because of disorganization have been greatly improved since the formation of the Institute. But we have not yet been able to eliminate entirely all the problems which have accumulated during the thirty-five years of its existence.

Inefficient selling methods enable the buyer to dominate the seller, inviting the submission of several prices in an attempt to get the order. This is only one of the many obsolete methods of merchandising in effect. Many instances on record point to a low bidder cutting his own low price, demonstrating that the buyer knew the most about salesmanship. The industry has suffered a loss of millions of dollars annually because of this vicious system of more than one price. The Institute is educating its members to the importance of adopting the one price policy, now accepted as offering the best protection to the buyer, the seller and the public.

I know of no better way to emphasize this most essential requirement for successful salesmanship than to quote from Judge Gary's recent interview which appeared in the December 18th issue of the Saturday Evening Post:

"The one price system," said Judge Gary, "is an example of what I have in mind. It is now taken for granted, but members of the older generation may recall the struggle that accompanies its introduction, little more than half a century ago. Up to that time business had been conducted frankly under the doctrine of 'caveat emptor.' For thousands of years, with relatively minor exceptions, haggling over price had been regarded as the essence of salesmanship. The seller asked more than he ever expected to get and the buyer offered less than he was really willing to pay. The one price system proposed that sales should be made on the basis of mutual confidence. . . . Instead of permitting prices to rise to any heights the traffic would bear, as some commentators feared at the time the one price system was advocated, it has turned out to be a powerful influence in the stabilization of prices at their



natural economic level, and the social consequences have become almost incalculable."

The custom of "practice shooting" at the low price—of submitting more than one quotation—is not only a display of weakness, it is positively pernicious. It is a policy now long ago abandoned as an adjunct of successful selling.

The furniture industry presents a situation where the fear of internal competition has "saled" the industry into seasonable slumps, largely because its methods represent 90 per cent price selling and 10 per cent merchandising. Commenting upon this condition, Mr. James H. Warburton, Sales Manager, Marietta Chair Company, says:

"When the furniture industry places itself on a better merchandising, instead of a price selling basis it will take its rightful place in the line-up of America's greatest industries."

One of the most difficult of all the steel industry's problems is due to the fact that different branches of the industry are competing unnecessarily and foolishly, thus allowing outside competition to cut in on markets that rightfully belong to steel. Steel cannot head off the competition of this encroaching material until the steel industry realizes that it should work together and present a united front in promoting its market.

At the present time, organized competition is affecting the use of structural steel to the extent of displacing approximately 900,000 tons annually.

Perhaps you can understand my point better when your attention is called to some of the relations which exist between the hot steel industry, the producer of the steel from the ore, and the cold steel industry, which fabricates the steel for various uses.

The hot steel industry has never asserted any organized interest in its product after it has passed into the hands of the cold steel industry. It has always thought, and still thinks, in terms of tonnage output. Concentration upon the greatest number of tons per man per day has brought about neglect of the market and all that concerns it.

(To Be Continued.)

## J. H. Trego to Retire from National Association of Credit Men

*Will Go Abroad for Summer and Locate Permanently in California Upon Returning*

J. H. TREGOE, who has been actively identified with the National Association of Credit Men since its inception in 1896, will retire from his position as executive manager of the credit men's organization on July 1, it was announced today by W. H. Pouch, president of the Concrete Steel Company and president of the association.

Mr. Pouch said that no steps have been taken to appoint a successor for Mr. Tregoe, who has made no plans beyond giving up his active work and making his permanent home in California after a trip abroad this summer with Mrs. Tregoe.

According to Mr. Pouch, Mr. Tregoe's decision to retire comes only a short time before the 32nd annual convention of the association at Louisville, Kentucky, from June 6 to 10, which will be known as the silver anniversary convention in honor of Mr. Tregoe's first election to the presidency 25 years ago this June at Louisville.

Mr. Pouch said that the directors of the organization have persuaded Mr. Tregoe not to withdraw entirely from participation in its affairs, as he had planned to do, and that after his retirement he will act in an advisory capacity. He added that for several years Mr. Tregoe has been planning to retire and had postponed his going yearly at the behest of the directors, but that this year he is adamant in his determination to retire.

"In the years of his active work in the credit world, J. H. Tregoe has built a unique position as an authority on the subject of commercial credits," Mr. Pouch said, "and his writings have won him the title, 'Credit Philosopher.' His work in the field of credit has been largely instrumental in building up the nation's credit technique, which

enables us to carry on a 100-billion-dollar yearly commerce on a basis of but five billions of gold in circulation.

"Mr. Tregoe's career is without a parallel in commercial history, inasmuch as he was a pioneer in the credit field and rose to his present position, alone at the top, by climbing steps which he made himself, without precedent in this or any other country to guide him.

"The principles on which the nation's credit technique is based were worked out largely by Mr. Tregoe, and the strength of the foundation which supports our huge commercial structure proves the soundness of his thought and the keenness of his vision.

"He was born in Baltimore 62 years ago, and for 37 years has been in credit work. At the age of 15 he left school and went to work as a clerk for a ship chandler."

Mr. Tregoe has made an enviable reputation for himself in his service to the association.



### Drying Ovens for Armatures and Large Electrical Machinery

From P. H. Kavanaugh and Son, 227 South Madison Avenue, Peoria, Illinois.

Who makes drying ovens for armatures and large electrical machinery?

Ans.—Drying System, Incorporated, 1800 Foster Avenue, Chicago, Illinois.

### 30 or 36 Gauge Spring Steel

From E. L. Shoup, 1010 Tenth Avenue, Broken Bow, Nebraska.

Please advise me where I can buy spring steel in a light weight, about 30 or 36 gauge.

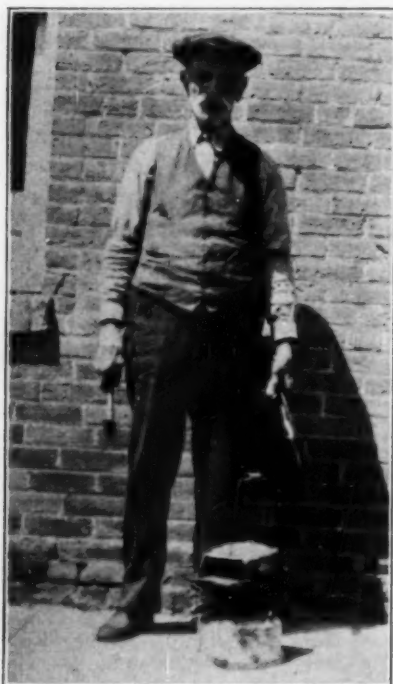
Ans.—Joseph T. Ryerson & Son, Incorporated, 2558 West 16th Street, Chicago, Illinois.

## Random Notes and Sketches

By Sidney Arnold

*"The essence of humor is sensibility; warm, tender fellow-feeling with all forms of existence."—Carlyle.*

You know sheet metal contractors, because of the regular habits, have become noted for their longevity of service to the public. I have



Ed. Bailey Who Was 81 Years Young  
Last March

a friend up in Delavan, Wisconsin, who has a record of service behind him. He is Mr. Ed. Bailey. Last March Mr. Bailey was 81 years

young. But in spite of Mr. Bailey's advanced age in years, he is exceedingly young in spirit; in fact, so much so that he is still very active in business. The accompanying photograph shows Mr. Bailey with soldering iron, torch and hammer as he appears today ready for business as usual. Mr. Bailey enjoys a fishing trip as much as he ever did. He is a very active part of the Fey & Fey organization who take care of the sheet metal, warm air heating and ventilating needs of the public at Delavan, Wisconsin. A portion of the Fey & Fey organization are shown in the second illustration. I certainly want to congratulate Mr. Bailey.

James Flavelle, of The Meyer Furnace Company, Peoria, Illinois, passed through Chicago on Wednesday of this week, and, although he did not have time enough at his disposal to pay me a visit, he did the next best thing, he called me on the telephone. I surely appreciated Mr. Flavelle's call.

I had a very pleasant visit on Thursday of this week from Harry G. Masten, of the Harry G. Masten Company, 105 West Monroe Street,

Chicago. Mr. Masten was formerly connected with the Merchant and Evans Company and is well known in sheet metal and warm air heating circles. Mr. Masten has gone into the business on his own and is handling Merchant & Evans and Barnes Zinc Company products. I surely enjoyed my visit with Mr. Masten.

\* \* \*

Some time ago there appeared in AMERICAN ARTISAN a photograph of a gent with a beautiful goatee. The editor discovered this cut in the morgue. It was that of the famous Dr. Von Dinklespiel. It so happens now that the said famous "doctor of science," Von Dinklespiel, had no further use for the disguise on his chin and so discarded it when he came to this country. In order that all his friends may recognize him without the goatee, I am presenting a picture of him as he appears now.



Tom Pearson or Dr. Von Dinklespiel,  
Take Your Choice

I've got a lot more of these old chestnuts in the morgue, which I think I will drag out, in order to see if I can't get some more of these birds up before the camera.

\* \* \*

### He Not First

She (just kissed by him): "How dare you? Papa said he would kill the first man who kissed me."

He: "How interesting. And did he?"



Reading From Left to Right—E. V. Fey; Mabel M. Fey; Alga Johnson, Book-keeper; Ed. Bailey; Rudy Reinbold; Ralph Phillips, Apprentice



# Standard Code Committee Gives Unbiased Opinion on Fan Question

*Reply Should Answer Question as Fully as Possible Asked at Peoria Convention*

**D**URING the famous "Start Something Hour" at the recent meeting of the Western Warm Air Furnace & Supply Association held in Peoria, Illinois, one of the questions asked was, "In what way will the attachment of a fan to a perfect Standard Furnace Code installation improve the functioning of that job?"

This question created a great deal of comment both at the convention and throughout the trade in general. "What is the answer to the question?" they all wanted to know.

The question was not fully answered at the convention. In order, therefore, to be of the greatest service to its readers and to the warm air heating trade in general, AMERICAN ARTISAN set out to get an answer to the question.

In order to get the most unbiased and unprejudiced opinion on the subject, the editor wrote to Professor J. D. Hoffman, Purdue University, LaFayette, Indiana, chairman of the Code Committee, asking him for his opinion on the subject.

Professor Hoffman then wrote to each individual member of the Code Committee and obtained an expression of opinion from them.

From these individual opinions, together with his own, Professor Hoffman compiled the following statement on the subject, which is the best answer to the question that can be given at the present time or until the research work has revealed more definite data than is now available:

Replying to your request of June 21st to the question, "In what way will the attachment of a fan to a perfect Standard Code job improve the functioning of that job?" I am pleased to reply for the committee as follows:

A properly selected furnace plant installed according to the Standard Code in a residence of at least aver-

age size and construction, will give satisfactory service without the assistance of a fan.

Discussing briefly the application of a fan to a standard furnace job, the committee offers the following suggestions:

In the absence of authoritative data, it is the opinion of the members of the committee that the installation of a fan with such a plant:

1. Will tend to correct circulation defects in misfit plants and in plants where the building construction is not of such a grade as to produce good heating.

2. Will circulate more air at higher velocities and at lower register temperatures.

3. Will tend to reduce temperature differences between ceiling and floor lines.

4. Will make possible the heating of rooms at such distances from the furnace that gravity circulation is impaired; i. e., medium or large plants.

5. Will probably reduce the morning "lag" in warming up the building.

On the other hand, there are certain further facts to be considered in every fan installation:

- A. Assuming that it is not desirable to have the expense of fan operation at all times, the circulation system should be designed for gravity circulation and the fan attachment should not interfere with normal gravity circulation.

- B. That the fan must have a capacity in excess to the normal air movement at the highest rates of combustion.

- C. That there should be double thermostatic control. (a) One on the main floor to control the drafts and (b) one in the main warm air pipe away from the influence of the direct radiation to control the fan.

- D. Capacity would probably be

gained, but the committee is not prepared to say that there would be any gain in thermal efficiency.

Yours very truly,

J. D. HOFFMAN,  
Chairman Code Committee.

## Carr Supply Company Issues New Catalog "C" on Moncrief Furnace

The Carr Supply Company, 412 North Dearborn Street, Chicago, Illinois, have recently issued their new catalog "C" on furnaces, registers, fittings and all warm air furnace supplies.

The book contains 35 pages, opening with enumeration and description of the features of the Moncrief "C" pipe furnace. The illustrations that accompany the descriptive matter are all well chosen and well arranged to give the reader almost as clear an idea of the furnace and its component parts as he could gain by first hand observation.

Cross-sections of both the pipe and pipeless furnace as they appear when cased are also given, showing size and price, and the price of the various casings. Complete prices on registers and fittings are also given in the book. In addition to the description of the products handled by the Carr Supply Company, a set of useful tables of circumferences and areas of circles are also given, making the book a ready and useful reference. If you have not already received this book, write to the Carr Supply Company for your copy at once.

## Armco Moves St. Louis Office

### D. E. Foley Is District Manager

American Rolling Mill Company, Middletown, Ohio, has moved its St. Louis office from the Boatman's Bank Building to 901 Ambassador Building. D. E. Foley is district manager.



# Copy of New Building Code Passed by Kansas City Building Council

## Code Relates to Chimney Flue, Heat- ing and Ventilating Requirements

THE following is the Standard Furnace Ordinance that was adopted recently by Kansas City, Nebraska:

### Section 30-1. Chimney Construction

1. The walls of all chimneys shall be built of solid brick, poured concrete or stone or steel, but the thickness and construction must be approved by the Division of Buildings & Inspections before construction begins. This shall not preclude the use of a metal smoke stack when located inside of a vent shaft having walls not less than 6 inches thick and having an air space between the walls and stack on all sides, which shall have masonry flues and must have the special approval of the Commissioner of Building and Inspections.

2. Mortar used for chimney construction will be of the same quality as required for walls except that no lime mortar will be allowed. The joints must be shoved or slushed up tight. See Section 17-4.

3. Chimneys shall be built upon concrete or masonry foundations properly proportioned to carry the weight. The foundation of an exterior chimney shall start below the frost line. No wood frame support of any kind may be used.

4. Chimneys having less than 300 sq. in. may be built not less than 4 inches thick if lined with fireclay flue lining. If larger in area the walls must be not less than 8 inches thick and the inside course must be fire brick at least 15 feet above the intake and 2 feet below the same except that radial brick chimneys need not be lined. The tile lining may be omitted in flues not exceeding 80 sq. in. providing the chimney is built of special brick, with interlocking vertical joints with the bond changed on every fourth course.

5. Stone chimneys shall be at least 4 inches thicker than required for corresponding brick chimneys, and shall have fire clay flue linings. Rubble stone chimney walls shall be not less than 8 inches thick.

6. Hollow building tile shall not be used for the walls of isolated or independent chimneys, but may be used for chimneys built in connection with exterior hollow tile walls of buildings not exceeding 3 stories in height, in which case the chimney walls shall be not less than 8 inches thick. The outer 8 inches of a building wall may serve as the outside wall of the chimney, but the remaining chimney walls shall be constructed of at least 4-inch solid brickwork. In either case the walls of the chimney shall be securely bonded into the wall of the building. No chimney shall be corbeled from a hollow tile wall. All chimneys built of hollow building tile shall have fireclay flue lining.

7. The walls of brick buildings may form a part of a chimney, but must be securely bonded into it and the flue shall be lined the same as an independent

chimney. Flues in party walls shall not extend beyond the center of the walls and their location shall be permanently indicated on the exposed side of the walls.

8. The Commissioner of Buildings and Inspections may permit a chimney to be corbeled on a wall not less than 12 inches thick, if properly designed.

9. Flues shall be built as nearly vertical as possible but in no case shall they have an angle greater than 22½ degrees from the vertical, and at no point shall the cross section area be reduced.

10. Chimneys shall be built at least 3 feet above flat roofs and 2 feet above the ridges of peak roofs and shall be high enough so that the wind shall not strike the top of the chimney from an angle above the horizontal. If this is not practical a ventilator cap shall be put over the top of the chimney.

11. Connections between chimneys and roofs shall be properly flashed to make them weatherproof and to allow for movements that may occur between chimneys and roof.

other flues or through the chimney wall indicates openings which shall be made tight.

15. Whenever any chimney shall be proved by test to be inadequate or defective, the Commissioner of Buildings and Inspections shall have the power to order the use of such an adequate or defective flue, discontinued.

16. Fireclay flue linings shall be of standard commercial sizes and thickness as approved by the Division of Buildings and Inspections. The linings must start at least 4 inches below the intake, shall be continuous, and project at least 4 inches above the top and be finished with a concave splay of rich cement mortar. All space between lining and walls of the chimney must be slushed full of mortar.

17. The owner or builder shall furnish in writing to the Division of Buildings and Inspections a statement of the total load to be connected to the proposed chimney, together with its size, height and construction. The minimum area inside of any chimney flue lining for fur-

Table of Chimney Sizes

Approximate cubical contents of space to be heated	Inches warm air leader pipe	Square feet of steam radiation	Square feet of hot water radiation	Height of Chimney			
				26 ft.	40 ft.	60 ft.	80 ft.
12000	500	250	375	8x12	.....	.....	.....
17000	700	350	525	12x12	8x12	.....	.....
25000	1000	500	750	12x17	12x17	8x12	8x12
37000	.....	750	1150	12x17	12x12	12x12	8x12
50000	.....	1000	1500	.....	12x17	12x12	12x12
75000	.....	1500	2250	.....	17x17	12x17	12x12
100000	.....	2000	3000	.....	17x17	12x17	12x17
150000	.....	3000	4500	.....	17x21	17x17	17x17
200000	.....	4000	6000	.....	21x21	17x21	17x21
250000	.....	5000	7500	.....	.....	21x21	21x21
300000	.....	6000	9000	.....	.....	24x24	21x21
350000	.....	7000	10500	.....	.....	24x24	24x24
400000	.....	8000	12000	.....	.....	27x27	24x24
450000	.....	9000	13500	.....	.....	27x27	27x27
500000	.....	10000	15000	.....	.....	32x32	27x27

Cubical contents is space to be heated.

12. No more than two flues shall be permitted in the same flue space and the two adjoining flue linings shall have their joints offset at least 12 inches, and shall be set at least 1 inch apart and filled with mortar. Where more than two flues are in a chimney at least each third flue shall be separated from the others by a smoke tight withe or dividing wall bonded into the side walls. Each flue intended for a heating furnace or boiler connection or for a fire place shall be separated from the other flues by such a withe.

13. All flues shall be left clean and smooth on the inside.

14. Whenever the draft of any flue built according to this Code is not sufficient, the Commissioner of Buildings and Inspections shall subject the flue to a smoke test by building a smudge fire at the bottom of the flue and while the smoke is flowing freely, close the flue tightly at the top. Escape of smoke into

nace or heating boilers shall be not less than 75 sq. in. for buildings containing up to 20,000 cu. ft. of space to be heated; for fireplaces not less than 1/10 the area of the fireplace opening but not less than 75 sq. in. for stoves and ranges not less than 49 sq. in., and no furnace or boiler flue shall be less than 26 ft. in height above the grate line in the basement. For larger buildings the Division of Buildings and Inspections must approve the size, height and constructions before the flue is built.

(A) Where more than one unit is connected to a flue, the chimney area shall be increased by 60% of the collar area to each additional unit. See Sec. 30-8.

(B) In no case shall the short cross-section dimension for a rectangular flue be less than 2/3 the greater dimension.

(C) In no case shall any other smoke or vent opening be connected to a fireplace flue.

(D) When gas or oil is used in a

heating furnace or boiler, or automatic hot water heater, the flues shall be of the same size and construction as required for same equipment using other fuel. Vent flues where required for other domestic gas burning appliances may be of smaller size, but not less than 10 square inches. Such flues shall be made of fire clay or its equivalent not less than 1 inch thick with joints properly designed to effect a permanent seal, and the surrounding masonry walls may be omitted. Metal vent flues are not permitted.

18. Every opening into a flue shall have a thimble of metal or a ring of fire brick cemented into the chimney air tight, and extending from the inside of the flue lining to the outside of the chimney wall. In no case shall either thimble, ring or breeching extend beyond the inside face of the flue lining.

19. Every smoke flue must be provided with an approved iron cleanout door below smoke pipe.

#### Section 30-2. Woodwork Around Chimneys

1. No wooden beams, joists, rafters or studs shall be placed within 2 in. of the outside face of a chimney or flue, whether the same be for smoke, air or other purposes.

2. No wood work shall be placed within 4 inches of the back of any fireplace unless the back is of masonry at least

shall be at least 16 inches wide, measured from the face of the chimney breast. The arches shall be of brick, stone or hollow tile, not less than 4 inches thick. A properly supported flat stone or hollow reinforced concrete slab may be used to carry the hearth instead of an arch. The length of trimmer arches and hearths shall be not less than 16 inches longer than the fireplace opening. Hearth shall be of brick, stone, tile, concrete or other incombustible material. Wood centering under a trimmer arch shall be removed before plastering the ceilings beneath.

3. No wooden mantel or other woodwork shall be placed within 8 inches of the side or top of any open fireplace. No combustible summer piece shall be used to close the fireplace openings and no false fireplace will be permitted.

4. All fireplaces shall have a chimney as in Section 30-1 (17) or a vent as described in Section 30-1 (17) d, but the area of this vent shall not exceed 16 square inches.

#### Section 30-4. Heating and Ventilating Apparatus

1. Inspection. The Commissioner of Buildings and Inspections shall inspect or cause to be inspected all heating and ventilating work as it progresses, as required by this Code.

Upon finding any heating or ventilating work defective or in a dangerous

#### Section 36. Heating System.

##### 1. Heating System.

Each and every building erected, operated or maintained, which is used or intended to be used for human habitation shall be provided with a method or system of artificial heating having a capacity sufficient to maintain a temperature of 70 degrees F in all occupied rooms during the heating season or be equipped with the means of attachment and safe operation of sufficient temporary sources of heat.

#### Section 37. Heating Furnaces and Appliances

1. High pressure steam boilers, bakery ovens, or furnaces in which fires are maintained producing a high degree of heat, shall rest on the ground, a trimmer arch, or a fireproof floor constructed in accordance with Sec. 28-2, and any woodwork coming within 10' of the top or sides and 20' from the front will be protected and ventilated so that the temperature shall not exceed 125 degrees and every structural column shall be isolated from direct contact with boiler setting.

2. Low pressure heating boilers, coffee roasters, fire heated kettles, laundry stoves, coal ranges without legs and similar appliances where hot fires are used, shall rest upon fireproof foundations as above. However, the Commissioner of Buildings and Inspections may allow them to be placed upon wooden floors if the floors are protected by sheet metal or a ½ inch layer of asbestos building lumber, covered with not less than 4 inches of masonry set in cement mortar. Such masonry shall consist of 1 course of 4-inch hollow terra cotta or two courses of brick or terra cotta, at least 1 of which shall be hollow and be laid to preserve a free circulation of air throughout the whole course. Concrete may be substituted for a course of solid brick if desired. The masonry work shall be covered by sheet metal of not less than No. 26 gauge, so arranged as not to obstruct the ventilating passages beneath. Such hearths shall extend at least 12 inches on the sides, back and front of the furnace, range or similar heating appliance; if solid fuel is used, the front extension shall be at least 24 inches.

3. And woodwork or wooden lath and plaster partitions within 4 ft. of the sides or back, or 6 feet from the front of any such boiler furnace, or heating appliance, shall be covered with metal shields or other approved incombustible material to a height of at least 4 feet above the floor. This covering shall extend the full length of the boiler, furnace or heating appliance, and to at least 5 feet in front of it. Such metal shields shall be so attached as to preserve an air space behind them. In no case shall such combustible construction be permitted within 2 feet of the sides or back of the heating appliance, or 5 feet in front of same without additional protection of a form approved by the Commissioner of Buildings and Inspections.

4. Heating boilers shall be encased on sides and top by incombustible protective covering not less than 1½ inches thick, and the overhead clearance of such covered boilers shall be not less than 15 inches. Any woodwork within 2 feet of the top of such boilers shall be protected by a loose fitting metal shield, but such shields shall not be placed so as to form concealed spaces.

#### Section 38. Smoke Pipes

Smoke pipes will be as short and di-

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8 in. thick, and then only unless metal grounds are provided for attaching the wood and a suitable fire stop provided.

3. For smoke flues or boilers and furnaces where the brickwork is required to be more than 8 in. in thickness, the header beams shall be not less than 4 in. from the outside of the brickwork.

4. The header beam, carrying the tail beams of a floor and supporting the trimmer arch in front of a fireplace, shall be not less than 20 inches from the chimney breast.

5. No wooden furring or studding shall be placed against any chimneys; the plastering shall be directly on the masonry, or on metal lathing, unless wooden studding is set 2 inches clear of the brick, with fire stop.

#### Section 30-2. Fire Places

1. The walls of fireplaces shall never be less than 8 inches thick, and if built of stone the minimum thickness shall be 12 inches.

2. All fireplaces and chimney breasts shall have trimmer arches or other approved fire resistive construction supporting hearths. The arches and hearths

condition, being constructed or having been constructed in violation of this Code, he shall thereupon notify the owner, lessee or occupant to remove or remedy the same within such reasonable time and in such manner as prescribed in Article 49.

#### Section 30-5. Permits and Notice of Starting Work.

1. New Building Permit Sufficient; Exceptions. A permit for a new building or structure shall carry with it the right to install the heating and ventilating apparatus, if the plans and specifications show in sufficient detail what heating and ventilating apparatus is contemplated. Otherwise, a special permit shall be obtained before starting the construction of any such work.

2. Notice required for inspection. The contractor for the construction of any heating and ventilating apparatus shall notify the Commissioner of Buildings and Inspections at least 24 hours before any inspections of his work are required, and it shall be unlawful for any work to be concealed until inspection has been made and same approved.



rect as possible and be made of not less than number 24 gauge iron, with a damper, well secured in place, tight fitted at furnace and flue, and be securely fastened in place.

1. Smoke pipe intakes to flues shall always enter the chimney through the side and shall consist of fire clay or metal thimbles securely set in the chimney wall with mortar, or the intake may be cased in concrete. Such openings shall be at least 18 inches below wooden lath and plaster or other combustible ceilings or open joists. Neither the intake pipe nor thimble shall project into the flue. No woodwork shall be placed within 6 inches of the thimble. The thimble shall be surrounded by metal lath and plaster for a space of at least 6 inches, or an open space of that width shall be provided on all sides.

2. Whenever a smoke pipe or breeching whose diameter is greater than the narrow dimension of the flue enters a flue on the narrow side a transition thimble or connection shall be used maintaining a full area through the wall of the chimney. When such a smoke pipe or breeching shall be reversed and the vertical dimension shall not exceed the narrow dimension of the flue unless it is necessary to obtain the area of the breeching.

3. Where more than one connection is made to a flue in one breeching the area of the breeching must not be less than the combined area of the collars of the units so connected. Gas water heaters must not be tapped in a smoke pipe or breeching of any other unit unless such smoke pipe or breeching is enlarged to maintain the combined area. No ventilating opening shall be made into any smoke flue.

4. No smoke pipe shall pass through the roof of any building unless a special permit be obtained for the same. If a permit is so granted, the roof through which smoke pipe passes shall be protected in the following manner: A galvanized iron ventilated thimble shall be installed of the following dimensions: Inside case shall be 150 per cent of the diameter of the smoke pipe, the outside shall be 200 per cent of the diameter of the smoke pipe, with a uniform space maintained and projected down 6 inches below the roof at the nearest point to the smoke pipe and project not less than a distance equal to the diameter of the smoke pipe above the roof at the nearest point to the smoke pipe. A rain shield may be put on the smoke pipe, but the space between such shield and the outer case shall not be less than the distance between the inner and outer edge. In no case shall exposed woodwork be within 24 inches of the smoke pipe.

5. No smoke pipe shall pass through any floor.

6. Where a smoke pipe passes through a wood lath and plaster or other combustible partition or wall, a section of the partition or wall shall be removed and the smoke pipe so placed that no part of it shall be nearer than 12 inches to any remaining combustible part of the partition. The section of the partition or wall so removed shall be replaced by approved fireproof material only, and an air space of at least 2 inches shall be preserved on all sides of the smoke pipe.

Smoke pipes for large cooking ranges, hot air furnaces, low pressure steam or hot water boilers, shall be not less than 18 inches below wood lath and plaster or

other combustible ceiling, unless at least the upper half of such smoke pipe is properly protected by 1 inch or more of asbestos covering or its equivalent, or by a metal casing spaced 2 inches from the upper half of the pipe. If so protected, smoke pipe shall be not less than 9 inches from any wood lath and plaster construction, woodwork or other combustible material. Smoke pipes from ordinary stoves shall be not less than 9 inches from any exposed woodwork.

#### Section 30-11. Warm Air Furnaces

1. When a warm air furnace is installed for heating to comply with the requirement of Section 30-6 (70 degrees) it shall be capable of heating the occupied space with a temperature of not exceeding 175 degrees at the registers. No furnace air supply shall be taken directly from a cellar. When a gravity warm air furnace is installed to comply with the requirements of Section 30-6 (70 degrees in zero) the capacity of the furnace, the warm air pipes, stacks, registers, and return ducts shall conform to the formulae of the third edition (June 1, 1924) of the *Standard Code of the National Warm Air Heating & Ventilating Association* in connection with the addition thereto of December 2, 1926.

2. Warm air furnaces must rest on a masonry foundation and be enclosed by a brick or metal casing with its top protected by sand, but not coming within 2 feet of any woodwork above unless it is further protected by a bright metal shield suspended from above, but never less than 12 inches and shall set not less than 2 feet on sides and 5 feet on the front from any woodwork or partition unless the same is protected by bright metal facings, with an air space. Warm air pipes contained in combustible partitions shall be placed inside another pipe arranged to maintain 5/16 inch air space between the two on all sides. Single wall stacks may be used if all studding and other woodwork facing the pipes is lined with bright metal and the stock covered with asbestos paper weighing not less than 10 pounds per 100 sq. ft. and metal lath is used for plastering to cover the pipes. All sections of pipe shall be fitted together with lock joints and all pipes must be securely fastened in place. Warm air pipes in closets shall be double with a space between them on all sides. The air space between pipes shall be open at bottom and closed at top.

3. Where warm air pipes pass through a masonry wall, a metal thimble shall be provided, having a diameter at least 1 inch greater than the pipe, and pipe supported in such a manner that the air space is uniform on all sides.

4. If a warm air pipe passes through a combustible partition wall the combustible material shall be cut away for a distance of 2 inches around the warm air pipe, but may be closed with incombustible material.

5. If a warm wall stack or register is placed within 5 feet of the furnace, two elbows shall be inserted in the warm air pipe leading to same.

6. The register boxes shall be of metal, and be double; the distance between the two shall be not less than 5/16 inch; or they may be single if covered with asbestos not less than 1/4 inch in thickness, and if all woodwork within 2 inches be covered with bright metal.

7. A register box placed in the floor over a portable furnace shall have an open space around it of not less than one

inch on all sides, and be supported by an incombustible border.

8. A register located over a brick furnace shall be supported by a brick shaft built up from the cover of the hot air chamber, and no woodwork shall be within 2 inches of the outer face of the shaft.

9. One register shall be arranged so it cannot be closed and on a supply without a damper.

10. No stack to be covered in until inspected.

11. Stoves shall not be placed nearer than 6 inches to any wood work when it is protected by metal nor nearer than 12 inches if unprotected and with at least 3 feet to the ceiling if the same is of combustible construction. Heating stoves resting on combustible floors shall have legs at least 6 inches high resting on a non-combustible floor shield extending 12 inches in front and 6 inches in other directions beyond the stove.

#### Section 30-13. Ventilating

1. All rooms or buildings in which the public congregates shall be provided with a ventilating system that shall effectively protect the health and comfort of the public and employees.

2. Such ventilating systems shall be designed, installed and operated so that the results as indicated by tests shall conform to standards as established by the American Society of Heating & Ventilating Engineers' Guide, 1925-1926 Edition, Part Two, Chapters XV and XVI.

#### Garages. 11.

The heating for all buildings used for garage purposes shall be done by steam of hot water where Class 1, 2 and 3 liquids are stored above ground within such building, or direct heating devices of a kind and installed in a manner as approved by the National Board of Fire Underwriters or as allowed by the Division of Buildings and Inspections. All boiler or other furnaces, forges or other exposed fires, lights or spark emitting devices or machines, and all repair shops, if on or below the topmost floor where Class 1 liquids are present (fuel in tanks of cars excepted) must be in a room separated from all other parts of the garage by an unpierced fire wall at least 8 inches thick. Such appliances may be kept in the garage if in a fire-proof room 8 feet above the topmost floor where Class 1 liquids are present (fuel in tanks of cars excepted) provided all doors and openings between such rooms and other parts of the garage are provided with standard self-closing fire doors kept closed. All such rooms must be ventilated at floor line as described in Section 39-2-(21).

12. All reserve and storage of Class 1 and 2 liquids must be stored in underground tanks. No Class 1 liquid shall be kept inside a garage except that contained in the reservoirs of motor vehicles and in the measuring pumps used for filling; provided, however, that there may be in each garage one or more approved portable wheeled tanks not exceeding 60 gallons capacity, to be used for transferring such liquids from the storage tanks; the number of these wheeled tanks shall be fixed for each garage by the Division of Fire Prevention. The reservoirs of motor vehicles shall be filled directly through hose from pump attached to such portable tank or by hose coupled to a permanent filling station connected with the main garage.



# Warm Air Furnace Window Display That Produces Business

*Slogan Plays Important Part in E. A. Knabe's Advertising Campaign*

**A** TTRACTING public attention favorable to his business is or should be the constant aim of every warm air furnace installer who desires to increase his business. One of the most effective methods of doing this, all retail merchants have learned, is through the use of a properly arranged window display.

The ways of making a warm air heating equipment window display are many and varied. E. A. Knabe, Rock Falls, Illinois, has hit upon a very productive method of creating sales by the proper use of his display windows. A photograph of one of these windows recently staged is shown in this issue. neatness gets by with Knabe in his store.

Mr. Knabe does not confine his advertising efforts to window displays, however, as he has a definite, coordinated plan of newspaper, bill board, direct-by-mail, and window display program. On all of this advertising he dwells on the thought shown in the slogan written across the front of the window, "Buy a XXth Century Furnace and Say Bye Bye Repairs."

M. E. Ticen, Chicago representative of the XXth Century Heating & Ventilating Company, has this to say about Mr. Knabe and his progressive business ideas: "Driving along the Lincoln Highway, you turn a mile south of the highway at Sterling, Illinois, cross Rock river and here you will find one of the most interesting warm air heating system dealers in the state of Illinois. Mr. Knabe is conceded to have one of the most complete sheet metal shops between Chicago and Clinton, Iowa. He believes in the old adage, "Cleanliness is next to Godliness." His shop is as spick and span as a Dutch mother's kitchen. Nothing short of extreme neatness gets by with Knabe.

"But he doesn't stop with that in the shop. He expects it from his installing crews and gets it. Mr. Knabe has a reputation of a careful neat workman who knows his business. His trade says of him, 'If Knabe does it, it'll be done right.' The window shown was trimmed by Mr. Ticen, and the cards used are also the product of Mr. Ticen's versatile pen.

## Service Like This Salesman Rendered Is Long Remembered

Isn't an incident like the following unusual? A woman had occasion to buy at a hardware store one of these large tin boilers used in canning fruit. It was not too heavy for her to carry. It was merely bulky. She paid for the boiler and said she would take it with her.

"We would be very glad to deliver it," said the young salesman.

"Oh, I would just as soon carry it. It isn't heavy and I want to use it this morning. In fact, that is why I came after it instead of telephoning. I don't live far away and I want to use it as soon as I get home."

The young man asked the woman's address and then said, "We haven't a delivery clerk around just now, but I don't want you to carry that big bundle home. Just wait a minute until I speak to the boss."

He talked to the boss, who readily gave him permission to deliver the boiler himself, and he rendered that service at once and made a permanent friend for the store.



A Twentieth Century Warm Air Heating Window Display Arranged in the Window of E. A. Knabe, Rock Falls, Illinois

## District Court of U. S. in Western Pa. District Hands Important Decision

### *On Columbus Heating & Vent. Co. vs. Pittsburgh Building Trades Council*

**A**N important court decision which affects the fabricators of sheet steel has just been handed down in the District Court of the United States for the Western District of Pennsylvania, Columbus Heating and Ventilating Company, plaintiff, versus Pittsburgh Building Trades Council, et al., defendants, No. 1780 in Equity.

The essential facts as stated by C. L. Patterson, Sheet Steel Trade Extension Committee, are:

The Columbus Heating and Ventilating Company, whose main business is furnishing and installing heating and ventilating equipment in public buildings in Ohio, Indiana, Kentucky, West Virginia and Pennsylvania, operates their factory in Columbus, Ohio, as an open shop.

The factory is practically non-union, while the installation forces are more or less composed of members of the Sheet Metal Workers' Union. During the last year efforts have been made by the Sheet Metal Workers' International to unionize the factory at Columbus and a special organizer was assigned the task of accomplishing this result. His efforts in this direction showed no progress and he, therefore, called upon local unions in various cities in which employees of the Columbus company were members, for assistance.

At a meeting of the Sheet Metal Workers' International at the American Federation of Labor convention in Detroit, it was decided to concentrate upon the Columbus company, and all local business agents should be notified to call off their men from working on jobs promoted by the Columbus Heating and Ventilating Company. As a result of this action, the sheet metal workers of the Dayton, Ohio, Local and of the Pittsburgh Local, were called from work during the month of November.

On November 18th, the members of Local No. 12, Pittsfield, Pa., who were employed by the Columbus Heating and Ventilating Company on a new public school building in Pittsburgh, were ordered to cease work. About the same time the members of the Dayton, Ohio, local were also ordered to cease work. However, the Columbus Heating and Ventilating Company continued its work at Dayton, and, as a consequence, the Dayton Building Trades Council called a general strike of all crafts. In Pittsburgh the work of the Columbus Heating and Ventilating Company was stopped and no attempt was made to continue same and, therefore, no general strike was called.

On December 5th, a preliminary restraining order was granted by the United States District Court, and after issuance of same, the Columbus company continued to do their work in Pittsburgh and no general strike followed. A hearing was held before Judge Thompson of the District Court on January 6th, to determine whether or not a preliminary injunction should be allowed the Columbus company in the Pittsburgh district, and on February 1st, Judge Thompson handed down his opinion which extended to the Columbus company the injunction they asked.

The opinion as handed down by the Court said in substance that:

"The action of the local unions was threatening the calling of a sympathetic strike and secondary boycott and that such constituted a combination and conspiracy to restrain interstate commerce which could be restrained by injunction. The Court further said that the Supreme Court held that the Act of Congress assumes the normal objects of labor unions are legitimate, but contains nothing to exempt them from ac-

countability when they depart from objects that are normal and legitimate and engage in a combination or conspiracy in restraint of trade. The Clayton Act refers to cases between employer and employee involving or growing out of a dispute concerning the terms or conditions of employment; that the words 'employers and employees' are not used in the general sense so as to treat all the members of a labor organization as parties of a dispute which affects only a few which would thereby legalize sympathetic strikes.

"The court enjoined the unions from combining and conspiring to injure the Columbus company's business or to interfere with the execution of its contracts; from causing or conducting strikes in their respective lines of activity or any other sympathetic strikes or secondary boycott; from interfering with any of the Columbus company's employees or coercing or threatening them to leave the employment of the Columbus company, and from issuing orders or requests to any other crafts working on the buildings on which the Columbus Company was working, to cease work on these buildings."

In its broad application, the opinion establishes the following: That where there is no controversy between the employer and employee, the labor unions cannot, without violating the law, call sympathetic strikes or institute secondary boycotts, such as placing parties upon the unfair lists and the like, or take action to interfere with the operations of any employer.

It has been common practice for the labor unions to refuse to handle materials made in open shops, on the grounds that by refusing to handle these goods, they were advancing the cause. The fact that a local union, as a member of the Interna-

tional affected, is interested in seeing the shop unionized, does not give them the right to exercise this secondary boycott. The court holds that such action as this actually constitutes a secondary boycott and is prohibited by law.

The noteworthy opinion resulting from this case has a direct bearing

upon the interests of the sheet steel industry, and is given you herewith for your information and dissemination. Copy of the original opinion in legal terms as handed down by Judge Thompson is in the office of AMERICAN ARTISAN for those who care to inspect it for full details on the case.

## **Second Warm Air Furnace Fan School Closes With Elaborate Banquet**

**Allen W. Williams Principal Speaker—  
School Voted Big Success**

THE second school of Practical Furnace Engineering, Cleveland, conducted under the auspices of the Warm Air Furnace Fan Company by J. C. Miles, vice-president, in collaboration with Professor Mumma, Case School of Applied Science; McRae Parker, former instructor in heat and ventilation at Cornell University, and Theodore L. Maynz, expert on combustion, closed with a banquet to the students at the Hotel Allerton, Cleveland, Ohio, on Friday evening, June 24th, after two weeks of intensive study.

The principal speaker was Allen L. Williams, secretary of the National Heating and Ventilating Association, Columbus. He brought the greetings of the National's president and expressed himself as delighted with the work that the school was doing.

J. C. Miles presided as toast-

master. Other speakers were Professor Maynz, McRae Parker, Lee M. Uhl, treasurer of the Warm Air Furnace Fan Company; Mr. R. B. Strong, vice-president of the Homer Furnace Company, Coldwater, Mich., who, on behalf of the students, presented J. C. Miles with a sterling silver cigarette case and a wardrobe suit case as a token of appreciation from the students of the school. Other presentations were made to Miss J. Polshek and E. F. Steffner of The Warm Air Furnace Fan Company, who assisted Mr. Miles in handling the details of the school.

The school was voted a great success by all present because of the intense work done, the excellent spirit of fellowship prevailing, and the finer and further understanding of the possibilities of the warm air heating business developed from the special training.

### **Majestic Company Dealers Hold Conference at Huntington, Indiana**

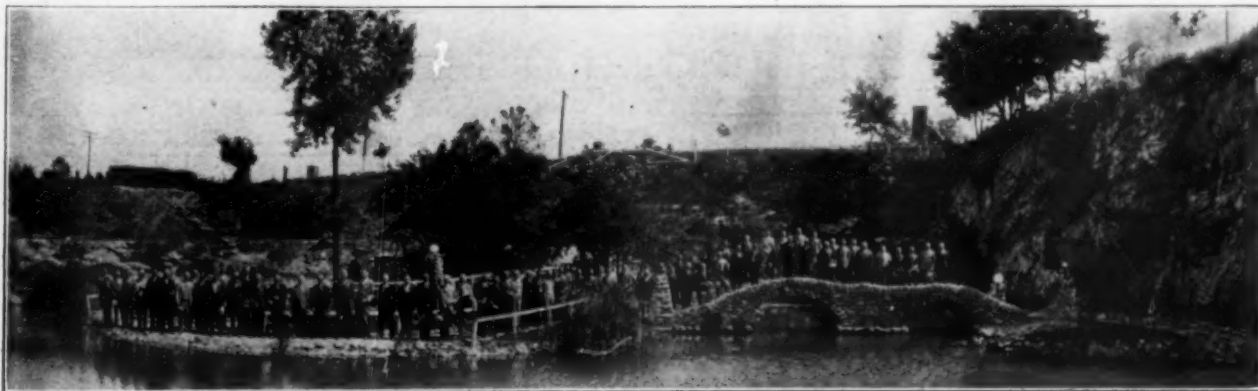
A radical departure in the method of staging the annual conference of the Majestic Company, Huntington, Indiana, was undertaken at the conference of that company held in Huntington, Indiana, on June 15 and 16.

Practically all of the time was devoted to better installations of warm air heating plants in accordance with the Standard Furnace Code. The main object was to educate as many as possible of the Majestic dealers in attendance on better sales methods and installation practice.

Officers of the company have felt for some time that no matter how interested the manufacturer is in the Standard Furnace Code, unless he passes the information he has at his command and his enthusiasm along to the dealers, very little good is done.

The program of events included an address of welcome by President Ed. Wasmuth of the Huntington, Indiana, Chamber of Commerce; a report of the warm air heating research work by Professor V. S. Day, and address by L. Wayne Army, Director of Publicity, the National Warm Air Heating and Ventilating Association. The accompanying illustration shows the men at Huntington.

Send your news items of interest to the trade to AMERICAN ARTISAN for publication. We are always glad to get them.



Group of Majestic Company Officers and Sales Executives at the Annual Conference at Huntington, Indiana, During the Middle of June. Entire Time of Conference Devoted to Better Installations of Warm Air Heating Plants



# Steel Output Is Down Due to Warm Weather—Sales in Finished Steel Steady

## Pig Iron Market Is More Active—Buying Is Light in Nonferrous Metals

**D**UE to the heat, which has worked the greatest hardship upon sheet mills, and the July 4th holiday, the real trend of the iron and steel markets has been obscured the past week.

Sales of finished steel have held their own in the past week and prices have given no more ground, holding at 1.80 cents, Pittsburgh, for attractive business in heavy finished material and at 1.85 cents for small lots.

Users of semi-finished steel have placed business that will carry them through part of the third quarter, but are refraining from quarterly contracts. Billets and slabs are being sold at \$33, Pittsburgh and Youngstown, sheet bars at \$33.50 to \$34, while considerable tonnage in wire rods has been placed at \$42.

A steady operating rate is expected in the steel industry in the west during July and August. The heavier buying of the last week or ten days has been encouraging. The warm weather has reduced production somewhat, particularly in sheets.

The market for steelmaking grades of pig iron at Pittsburgh is more active, featured by an order from a mold manufacturer for 6,000 tons of bessemer. This was placed with a Pennsylvania steel works having a freight rate of \$1.26 to destination, instead of \$2.02, as some valley stacks, which did not compete.

It is understood a Canton, Ohio, manufacturer of roller bearings bought 8,000 to 10,000 tons of basic from a nearby furnace having an exceedingly low delivery cost. Valley interests are not quoting less than \$17.50 for basic and \$18.50 for bessemer. Small lots of the latter grade are selling every few days.

Sales of foundry and malleable iron are scarce, due to large carry-

overs from second quarter. Recent purchases of those grades by railroad equipment manufacturers were made at a minimum of \$17.50 for No. 2 plain.

Some producers still are adhering to \$18 for the base grade, plus silicon differentials. Few inquiries are pending and most of them involve less than 500 tons at a time.

Average sales prices for June on bessemer and basic pig iron, respectively, were \$18.895 and \$17.857, valley. These compare with \$19.18 and \$18.20, respectively, for May. The average sales price in June, 1926, was \$19, while for basic it was \$18, valley.

At Chicago spot buying of northern pig iron is showing slightly more activity. Some fair inquiries have developed for third quarter. About 2,000 to 3,000 tons of foundry and malleable iron has been sold to a western Michigan melter in competition with Detroit and Toledo furnaces. About 2,000 tons of silvery iron has been placed in Michigan by the Iowa producer.

In the Chicago district, northern Illinois and Wisconsin, \$20, Chicago turnace, is obtained on all the going business. Prices to the southwest and east are affected by eastern and also southwestern competition.

Little change is noted in the pig iron market at Birmingham. Blast furnaces on basic iron are being banked or blown out. Quotations are held at \$18, base, Birmingham.

### Copper

Recent firmness was quickly lost and copper has been selling again at 12.50 cents, Connecticut, 12.62½ cents to 12.75 cents, Midwest. Buying has been unusually light, with users showing almost no interest. On this account most producers, especially large ones, have not been quoting 12.50 cents. Export busi-

ness also has been light, but a little more active than domestic.

### Tin

Some days have been active, but most of them quiet and prices have sagged, especially on nearby as the tight situation has been removed. The world visible increased nearly 1,000 tons in June, but this was less than expected.

Domestic deliveries in the first half were over 2,700 tons short of the first half of last year. The premium on spot is the smallest in several months and interest now is more in forward months.

### Zinc

A little business has been done in prime western zinc, but not enough to hold the market even in the face of restricted ore supply and strong prices for ore.

### Lead

The domestic lead market has done fair business the past month, mostly for shipment in June and July, but in the past week weakness of the London market discouraged buyers and the threat of larger foreign supplies put prices down 10 points.

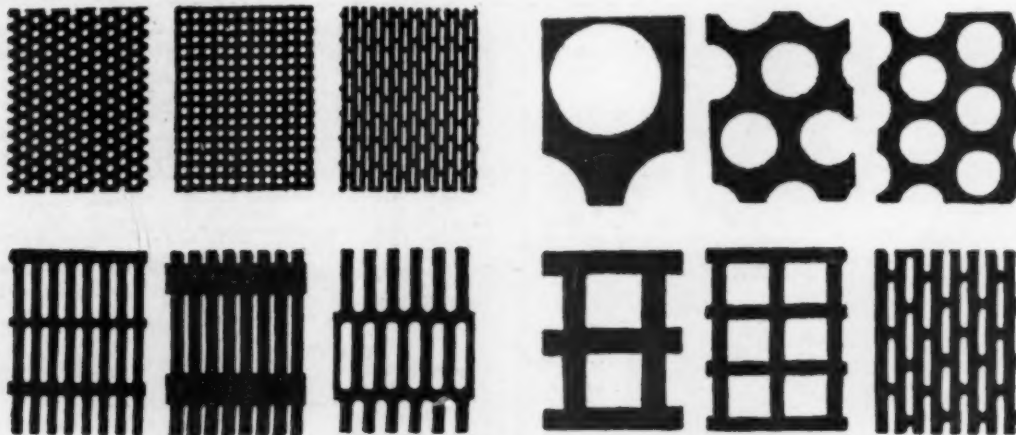
### Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, \$40.56; commercial 45-55, \$37.50; plumbers', \$34.50; all per 100 pounds.

### Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$16.50 to \$17.00; old iron axles, \$20.00 to \$20.50; steel springs, \$14.25 to \$14.75; No. 1 wrought iron, \$11.00 to \$11.50; No. 1 cast, \$13.50 to \$14.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; zinc 3½ cents; cast aluminum, 13¾ cents.

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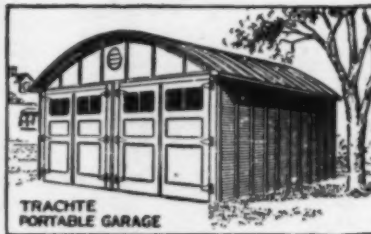
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COMPANY, INCORPORATED**

MADISON, WISCONSIN



# Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

## METALS

### PIG IRON

Chicago Fdy., No. 2.....	\$20 00
Southern Fdy., No. 2.....	24 01
Lake Superior Charcoal.....	27 04
Malleable .....	20 00

### FIRST QUALITY BRIGHT TIN PLATES

IC 20x28 112 sheets.....	\$25 10
IX 20x28.....	29 60
IXX 20x28 56 sheets.....	16 20
IXXXX 20x28.....	17 50
IXXXX 20x28.....	18 95

### TERNE PLATES

	Per Box
IC 20x28, 40-lb. 112 sheets	\$26 00
IX 20x28, 40-lb. 112 sheets	25 50
IC 20x28, 25-lb. 112 sheets	21 75
IX 20x28, 25-lb. 112 sheets	24 25
IC 20x28, 20-lb. 112 sheets	20 00
IV 20x28, 20-lb. 112 sheets	22 50
IC 20x28, 15-lb. 112 sheets	18 50

### "ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including	
1/4 in.—100 lbs.....	\$4 55

### COKE PLATES

Cokes, 80 lbs. base, 20x28.....	\$13 60
Cokes, 90 lbs. base, 20x28.....	13 80
Cokes, 100 lbs. base, 20x28.....	14 00
Cokes, 107 lbs. base, IC 20x28.....	14 30
Cokes, 135 lbs. base, IX 20x28.....	16 40
Cokes, 155 lbs. base, 56 sheets.....	9 20
Cokes, 175 lbs. base, 56 sheets.....	10 05
Cokes, 195 lbs. base, 56 sheets.....	10 90

### BLUE ANNEALED SHEETS

Base 10 ga.....per 100 lbs.	\$3 50
"Armco" 10 ga.....per 100 lbs.	4 00

### ONE PASS COLD ROLLED BLACK

No. 18-20.....per 100 lbs.	\$3 75
No. 22.....per 100 lbs.	3 90
No. 24.....per 100 lbs.	3 95
No. 26.....per 100 lbs.	4 05
No. 27.....per 100 lbs.	4 10
No. 28.....per 100 lbs.	4 20
No. 29.....per 100 lbs.	4 35
No. 30.....per 100 lbs.	4 45

### "ARMCO" GALVANIZED

"Armco" 24.....per 100 lbs.	\$6 15
-----------------------------	--------

### GALVANIZED

No. 16.....per 100 lbs.	\$4 30
No. 18.....per 100 lbs.	4 45
No. 20.....per 100 lbs.	4 60
No. 22.....per 100 lbs.	4 65
No. 24.....per 100 lbs.	4 80
No. 26.....per 100 lbs.	5 05
No. 27.....per 100 lbs.	5 15
No. 28.....per 100 lbs.	5 30
No. 30.....per 100 lbs.	5 70

### BAR SOLDER

Warranted 50-50.....per 100 lbs.	\$40 50
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Commercial 45-55.....per 100 lbs.	37 50
Plumbers.....per 100 lbs.	34 50

### ZINC

In Slabs .....	\$ 8 50
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### SHEET ZINC

Cash Lots (600 lbs.).....	\$11 75
Sheet Lots .....	12 75

### BRASS

Sheets, Chicago base.....	17 1/2 c
Mill Base .....	17 1/2 c
Tubing, brazed base.....	26 1/2 c
Wire, base .....	18 c
Rods, base .....	15 1/2 c

### COPPER

Sheets, Chicago base .....	21 1/2 c
Mill Base .....	20 1/2 c
Tubing, seamless base.....	24 1/2 c
Wire, No. 9, B & S Ga.....	17 1/2 c
Wire, No. 10, B & S Ga.....	17 1/2 c
Wire, No. 11, B & S Ga.....	18 1/2 c
Wire, No. 8, B & S Ga. and heavier .....	17 c

### LEAD

American Pig .....	\$ 7 15
Bar .....	8 15

### TIN

Pig Tin .....	per 100 lbs. \$74 00
Bar Tin .....	per 100 lbs. 75 00

## HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

### ASBESTOS

Paper up to 1/16.....	6c per lb.
Roll board .....	6 1/2 c per lb.
Mill board 3/32 to 1/2.....	6c per lb.
Corrugated Paper (250 sq. ft. to roll).....	\$8 00 per roll

### BRUSHES

Hot Air Pipe Cleaning Bristle, with handle, each	\$0 85
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Flue Cleaning Steel only, each.....	1 25
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### BURRS

Copper Burrs only.....	40-5%
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### CEMENT, FURNACE

American Seal, 5-lb. cans, net	\$ 40
American Seal, 10-lb. cans, net	50
American Seal, 25-lb. cans, net	2 00
Pecora .....	per 100 lbs. 7 51

### CHIMNEY TOPS

Adams' Revolving	Wt. Doz.	Prize Doz.
4 in.....	21 lbs.	\$11 00
6 in.....	24 lbs.	11 50
7 in.....	30 lbs.	13 50
8 in.....	33 lbs.	15 00
9 in.....	51 lbs.	16 50
10 in.....	56 lbs.	18 00
12 in.....	66 lbs.	22 00
14 in.....	110 lbs.	38 00

### CLINKER TONGS

Front Rank, each.....	\$0 75
Per doz.....	8 40

### CLIPS

Acme, with all tail pieces, per doz.....	\$1 25
Non Rivet tail pieces, per doz.....	25

### DAMPER

Acme, with all tail pieces, per doz.....	\$1 25
Non Rivet tail pieces, per doz.....	25

### COPPERS—Soldering

Pointed Roofing	
3 lb. and heavier.....	per lb. 40c
2 1/2 lb. ....	per lb. 45c
2 lb. ....	per lb. 45c
1 1/2 lb. ....	per lb. 55c
1 lb. ....	per lb. 60c

### CORNICE BRAKES

Chicago Steel Bending Nos. 1 to 6B.....	Net
---	-----

### CUT-OFFS

Gal., plain, round or cor. rd.	
26 gauge .....	30%
28 gauge .....	35%

### DAMPERS

"Yankee" Hot Air	
7 inch, each 20c, doz.....	\$1 75
8 inch, each 25c, doz.....	2 40
9 inch, each 30c, doz.....	2 75
10 inch, each 32c, doz.....	3 00

Smoke Pipe	
7 inch, each.....	\$0 35
8 inch, each.....	40
9 inch, each.....	45
10 inch, each.....	60
12 inch, each.....	90

Reversible Check	
8 inch, each.....	\$ 50
9 inch, each.....	70

Diamond Smoke Pipe	
7 inch, doz.....	\$ 5 00
8 inch, doz.....	8 00
9 inch, doz.....	12 00
10 inch, doz.....	15 00

### Adams' Sheet Metal

7 inch, doz.....	\$ 1 60
8 inch, doz.....	2 20
9 inch, doz.....	2 60
10 inch, doz.....	2 80

### DIGGERS

Post Hole	
Iwan's Split Handle (Eureka) 4-ft. Handle.....	per doz. \$14 00
7-ft. Handle.....	per doz. 36 00
Iwan's Hercules pattern, per doz.....	14 90

### EAVES TROUGH

Galv. Crimpedge, crated 75 & 5%	
Zinc, "Barnes" .....	60%

### ELBOWS

Conductor Pipe	
Galv., plain or corrugated, round flat Crimp.	
25 Gauge .....	60%
26 Gauge .....	45%
24 Gauge .....	15%
Galv. & Terne Steel	
Plain Rd. and Rd. Corr.:	
28 Ga. ....	60%
26 Ga. ....	45%
24 Ga. ....	15%

Square Corrugated	
No. 25 Gauge.....	50%
26 Gauge .....	35%

Portico Elbows	
Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested .....	70 & 5%
Nested solid .....	70 & 5%

Sq. Corr., A. & B. & Octagon:	
28 Ga. ....	50%
26 Ga. ....	35%

Portico	
1", 1 1/4", 1 1/2".....	45%

Copper	
16 oz., all designs.....	45%

Zinc—	
All styles .....	60%

### ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 25 Gauge.....	1 25
5-inch .....	1 35
6-inch .....	1 75
7-inch .....	1 75

### Special Corrugated

6-inch .....	\$1 00
7-inch .....	1 60

### Adjustable—Uniform Blue

"Milcor" No. 25 Gauge, Uniform Blue.....	
5-inch .....	\$1 75
6-inch .....	1 85
7-inch .....	2 15

### WOOD FACES—50% off list.

FENCE	
726-6-12 1/4% (100 rods).....	\$28 62
1948-6-14 1/4% (100 rods).....	43 62

### FILES AND RASPS

Heller's (American) .....	50-10%
American .....	60-10%
Arcade .....	50%
Black Diamond .....	50%
Eagle .....	50%
Great Western .....	50%
Kearney & Foot .....	50%
McClellan .....	50%
Nicholson .....	50%
Simonds .....	50%

### FIRE POTS

Clayton & Lambert's East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Arizona, San Angelo and Laredo, Texas .....	52%
West of above boundary.....	48%

### Geo. W. Diener Mfg. Co. Ea.

No. 02 Gasoline Torch, 1 qt. ....	\$ 5 55
No. 0250, Kerosene, or Gasoline Torch, 1 qt.....	7 50
No. 10 Tinner's Furn. Square tank, 1 gal.....	12 60
No. 15 Tinner's Furn. Round tank, 1 gal.....	12 00
No. 21 Gas Soldering Furnace .....	3 60
No. 110 Automatic Gas Soldering Furnace .....	10 50

### Double Blast Mfg. Co.

Gasoline, Nos. 25 and 36.....	60%
-------------------------------	-----

### Quick Meal Stove Co.

Vesuvius, F. O. B. St. Louis	30%
(Extra Disc. for large quantities)	

### GALVANIZED WARE

Pails (Galv. after made), 10-qt. ....	\$2 12
Tubs (Galv. after made), No. 1 .....	6 00
No. 2 .....	6 85

### GLASS

Single Strength, A, 25-in. brackets .....	87%
Single Strength, A, 34 to 40-in. bracket .....	86%
Single Strength, A, all other brackets .....	86%
Double Strength, A, all sizes.....	86%

### HANGERS

Conductor Pipe	
Milcor Perfection Wire.....	25%

### Eaves Trough

Milcor Eclipse Wire .....	15%
Milcor Triplex Wire .....	10%
Milcor Milwaukee Extension 10% Milcor Steel (galv. after forming) List.....	plus 12 1/2%
Milcor Selflock E. T. Wire, List .....	plus 50%

### HOOKS

Box V. & B. No. 1, each.....	\$0 26
------------------------------	--------

### Conductor

"Direct Drive" Wrought Iron for wood or brick.....	15%
--	-----

### Hay

V. & B. No. 1, each.....	\$0 26
--------------------------	--------

### HUMIDIFIERS

"Front-Rank," Automatic In single lots .....	50%
In lots of 10 or more.....	50-5%
In lots of 25 or more.....	50-10%
Vapor pans, etc., each.....	50%

### LIFTERS

Stove Cover	
Coppered .....	per gro. \$6 00
Alaska .....	per gro. 4 75

### MAILETS

Hickory .....	per doz. \$2 25
---------------	-----------------

### MITRES

Galvanized steel mitres, 28 Ga. ....	70
26 Ga. ....	60-20

### NAILS

Cut Steel .....	\$4 35
Cut Iron .....	4 35

Wire	
Common .....	2 95
Cement Coated .....	2 95

(Continued on Page 80)



# THE J. M. & L. A. OSBORN COMPANY

1541-51 East 38th Street  
CLEVELAND, OHIO

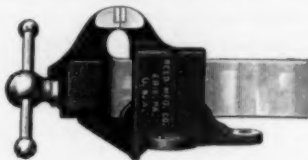
Buffalo Warehouse

64-68 Rapin Street

*"Everything Used in Sheet Metal Work"*

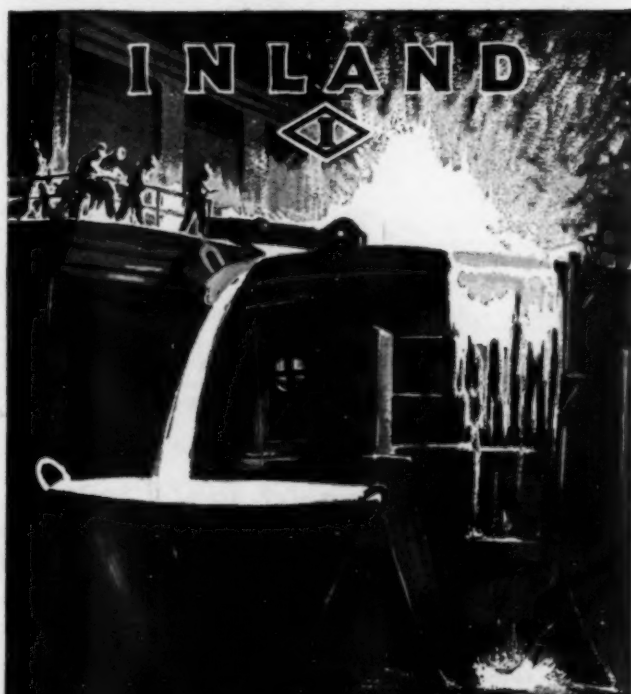
## Machinists' Vises

Stationary Base



Stationary jaws with tool steel facings  
securely welded on deep cross milled  
corrugations, broached body, carefully  
machined sliding bar.

Nos. ....	103	101	105
Width jaw, in. ....	3	4	5
Jaw opens, in. ....	4	6	8
Weight each, lb. ....	22	43	73



*At the  
Service  
of Steel  
Users*

## INLAND STEEL COMPANY

38 South Dearborn Street, Chicago

Works: Indiana Harbor, Indiana; Milwaukee, Wisconsin  
Chicago Heights, Illinois

Branch Offices and Representatives

ST. PAUL • ST. LOUIS • SALT LAKE CITY • MILWAUKEE  
KANSAS CITY • NEW ORLEANS • EL PASO

Round  
Corrugated



Plain Round



NEVER MADE WITHOUT THIS

TRADE *F. Dieckmann* MARK

*Quality and Service Made 'em Famous*

Made of one piece of heavy gauge material,  
in all styles and angles from 10 to 90  
degrees, of 24, 26, 28 ga. tines, then  
galvanized after formation.

## DIECKMANN Elbows and Shoes

*are the standard of the market  
and always give satisfaction*

Send for new catalogue 26 showing complete line

The Ferdinand Dieckmann Co.

P. O. Station B, Cincinnati, O.

Square  
Corrugated  
Style A



Square  
Corrugated  
Style B



Not made lighter than  
28 ga. or 16 oz. copper

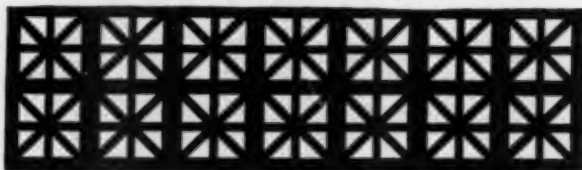
## ADVERTISERS' INDEX

The dash (—) indicates that the advertisement runs on a regular schedule but does not appear in this issue.

A		M	
Akrat Ventilators, Inc.	86	Majestic Co., The	—
Aeolus Dickinson Co.	81	Marshalltown Mfg. Co.	—
Agricola Furnace Co., Front Cover	—	May-Fiebeger Co.	—
American Foundry & Furnace Co.	—	Merchant & Evans Co.	—
American Furnace Co.	—	Meyer & Bro. Co., F.	—
American Rolling Mill Co.	—	Meyer Furnace Co., The	—
American Steel & Wire Co.	83	Michigan Fireproof Skylight Co.	—
American Wood Register Co.	—	Milwaukee Corr. Co., Back Cover	—
Apollo Metal Co.	85	Monitor Furnace Co.	—
Arex Co.	86	Mt. Vernon Furn. & Mfg. Co.	—
Automatic Humidifier Co.	—	Mueller Furnace Co., L. J.	46
B		N	
Barnes Zinc Products Co.	—	National Heatcraft Institute	—
Berger Bros. Co.	83	National Warm Air Heating & Vent. Assn.	—
Berger Co., L. D.	—	New Jersey Zinc Sales Co., The	—
Berns Co., Otto	—	Northwestern Stove Repair Co.	51
Brillion Furnace Co.	51		
Bertsch & Co.	83		
Buckeye Products Co.	—		
Burgess Soldering Furnace Co.	—		
C		O	
Calkins & Pearce	—	Osborn Co., The J. M. & L. A.	79
Central Alloy Steel Corp.	—		
Chicago Elbow Machine Co.	—		
Chicago Solder Co.	81		
Clayton & Lambert Mfg. Co.	—		
Cleveland & Buffalo Transit Co.	50		
Cleveland Castings Pattern Co.	50		
Colburn Heater Co.	—		
Connors Paint Co., Wm.	—		
Cortright Metal Roofing Co.	—		
Copper & Brass Research Association	—		
D		P	
Diamond Mfg. Co.	81	Parker-Kalon Corp.	—
Dieckman Co., Ferdinand	79	Peck, H. E.	86
Diener Mfg. Co., Geo. W.	83	Peck, Stow & Wilcox	—
Double Duty Mfg. Co.	—	Pecora Paint Co.	—
Dries & Krump Mfg. Co.	81-87	Pfeifer, Wm.	—
E		Polk, R. L.	—
Eaglesfield Ventilator Co.	—	Prest-O-Lite Co., Inc.	—
F			
Fanner Mfg. Co.	—		
Forest City Fdy. & Mfg. Co.	—		
Floral City Heater Co.	50		
Fort Shelby Hotel	—		
Friedley-Voshardt Co.	77		
G			
Gerock Bros. Mfg. Co.	87		
H			
Harrington & King Perf. Co.	77		
Hart & Cooley Co.	—		
Henry Furnace & Fdy. Co.	51		
Hess-Snyder Co.	—		
Hessler Co., H. E.	—		
Homer Furnace Co.	—		
Hyro Mfg. Co.	—		
I			
Independent Register & Mfg. Co.	—		
Inland Steel Co.	79		
International Heater Co.	—		
J			
Keith Furnace Co.	—		
Kernchen Co.	—		
Kirk-Latty Co.	50		
K			
Lalance & Grosjean Mfg. Co.	—		
Lamneck & Co., W. E.	—		
Lamson & Sessions Co., The	—		
Langenberg Mfg. Co.	—		
Lennox Furnace Co.	—		
Liberty Foundry Co.	—		
Linde Air Products Co.	—		
Lupton's Sons Co., David	—		

## Markets—Continued from page 78

NETTING, POULTRY		ROOFING	
Galvanized before weav-	57 1/4-5%	Best grade, slate surf. pre-	Per Square
ing	57 1/4-5%	pared	\$ 2 30
Galvanized after weaving	52 1/4-5%	Best talc surfaced	2 65
		Medium talc surfaced	3 00
		Light talc surfaced	1 30
		Red Rosin Sheeting, per ton	57 00
PASTE		SCREWS	
Asbestos Dry Paste:		Sheet Metal	
200-lb. barrel	\$16 00	7, 1/4x1/4, per gross	\$0 53
100-lb. barrel	8 75	No. 10, 1/4x3/16, per gross	68
35-lb. pail	3 50	No. 14, 1/4x1/4, per gross	89
10-lb. bag	1 10		
5-lb. bag	60		
2 1/2-lb. cartons	35		
PIPE		SHEARS, TINNERS' & MACHINISTS'	
Conductor		Viking	\$22 00
Cor. Rd., Plain Rd. or Sq.		Lennox Throatless	
		No. 18	35%
		Shear blades	10%
		(f. o. b. Marshalltown, Iowa.)	
Galvanized			
Crated and nested (all	75-2 1/4%		
gauges)			
Crated and not nested	70-15%		
(all gauges)			
FURNACE PIPE		SHIELDS, REGISTER	
Double Wall Pipe and		No. 1 "Gem" floor	\$12 00 doz.
Fittings	50%	No. 2 "Gem" wall	6 00 doz.
Single Wall Pipe, Round			
Galvanized Pipe	50%		
Galvanized and Tin Fittings	50%		
LEAD		SHOES	
Per 100 lbs.	\$12 50	Galv. 28 Gauge, Plain or cor-	
		rugated round flat crimp	60%
		26 gauge round flat crimp	45%
		24 gauge round flat crimp	15%
STOVE PIPE		SNIPS, TINNERS'	
"Milcor" "Titelock" Uniform Blue		Clover Leaf	40 & 10%
Stove		National	40 & 10%
28 gauge, 5 inch U. C.	11 50	Star	50%
28 gauge, 6 inch U. C.	12 25	Milcor	Net
28 gauge, 7 inch U. C.	14 25		
30 gauge, 5 inch U. C.	10 50		
30 gauge, 6 inch U. C.	11 25		
30 gauge, 7 inch U. C.	13 25		
T-Joint Made up		SQUARES	
6-inch, 28 ga.	per doz. \$ 5.00	Steel and Iron	Net
		(Add for bluing, \$3 per doz. net.)	
ALL ZINC		Mitre	Net
No. 11, all styles	60%	Try	Net
POKERS, STOVE		Try and Bevel	Net
W'r't Steel, str't or bent,	per doz. \$0 75	Try and Mitre	Net
Nickel Plated, coll handles,	per doz. 1 10	Fox's	per doz. \$6 00
		Winterbottom's	10%
POKERS, FURNACE		STOPPERS, FLUE	
Each	\$0 50	Common	per doz. \$1 10
PULLEYS		Gem, No. 1	per doz. 1 10
Furnace Tackle	per doz. \$0 60	Gem, flat, No. 3	per doz. 1 00
Furnace Screw (enameled)	per doz. 6 00		
Furnace Screw (enameled)	per doz. 75		
VENTILATING REGISTER		VENTILATORS	
Per gross	9 00	Standard	30 to 40%
Small, per pair	30		
Large, per pair	50		
PUTTY		WIRE	
Commercial Putty, 100-lb		Plain annealed wire, No. 8,	
Kits	\$3 40	per 100 lbs.	\$3 05
QUADRANTS		Galvanized barb wire, per	
Malleable Iron Damper	10%	100 lbs.	3 90
REDUCERS—Oval Stove Pipe		Wire Cloth—black painted,	
Per Doz.		12-mesh, per 100 sq. ft.	1 65
7-6, 1 doz. in carton	\$2.25	Cattle Wire—galvanis'd catch	
REGISTERS AND BORDERS—		weight spool, per 100 lbs.	3 65
Baseboard, Floor and Wall.		Galvanized Hog Wire, 30 rod	
Cast Iron	20%	spool, per spool	3 18
Steel and Semi-Steel	40%	Galvanized Plain Wire, No.	
Baseboard	40%	9, per 100 lbs.	3 40
Wall	40%	Stove Pipe, per stone	1 10
Adjustable Ceiling Ventilators	40%		
REGISTER FACES—Cast and Steel		WRINGERS	
Japanned, Bronzed and		No. 790, Guarantee	each \$5 10
Plated, 4x6 to 14x14	40%	No. 770, Bicycle	each 4 70
Large Register Faces—Cast,		No. 670, Domestic	each 4 35
14x14 to 36x42	60%	No. 110, Brighton	each 3 70
Large Register Faces—Steel,		No. 750, Guarantee	each 5 10
14x14 to 36x42	65%	No. 740, Bicycle	each 4 70
RIDGE ROLL		No. 23, Pioneer	each 3 40
Galv. Plain Ridge Roll,		No. 2, Superb	each 2 65
b'd'd	75-10-5%		
Galv. Plain Ridge Roll			
crated	75-10%		
Globe Finales for Ridge			
Roll	50%		



### PERFORATED METAL GRILLES

*All Styles of Perforations  
All Sizes of Perforations  
All Thicknesses of Metal*

MADE IN STEEL, BRASS, BRONZE AND COPPER  
Highest quality metal and workmanship.  
Write for catalog today.

**DIAMOND MANUFACTURING COMPANY**  
WYOMING, PA.

New York Office, 1819 Broadway Pittsburgh Office, 219 Third Ave.

### CHICAGO STEEL SLITTING SHEAR

**LIGHT—POWERFUL  
DURABLE**



Capacity 10 gauge sheets  
Any Length or Width  
Flat Bars 3/16x2'  
Weight 22 pounds  
Price \$12.50 Net  
F. O. B. Chicago

Made of pressed steel and equipped with  
hold-down. Blades of highest grade cru-  
cible steel. Most indispensable high grade shears made. Equal to  
other shears selling at over twice the price. **ORDER YOURS TODAY.**

**DREIS & KRUMP MFG. CO., 7404 Loomis St., Chicago**

### ÆOLUS FOR HOMES



*The 12-Cylinder Ventilator  
Used in Every State  
in the Union.*

**SPECIFY ÆOLUS  
VENTILATORS**

The home should be prop-  
erly ventilated—few of them  
are. Here is a sales oppor-  
tunity often overlooked by  
the average Sheet Metal  
Worker, but one which offers  
a lucrative business to those  
who take advantage of it.

**Æolus-Dickinson Co.**

*Vent Makers Since 1888*

3332-52 South Artesian Avenue  
CHICAGO

Phone: Lafayette 1862-1863

### The NEW IMPROVED "STANDARD"

**ROTABLE VENTILATOR**

THIS favorite ventilator  
has been further im-  
proved to insure—

*Greater Durability  
Quieter Operation  
Greater Efficiency  
Better Balance*

The New Cone-top Suspen-  
sion, new Bronze Guide  
Bushings, and Cross-Braced  
Skirt are the new features.  
Let us tell you in detail all  
about this better ventilator.

*Write for special circular and  
prices today*

"Standard" Ventilator and Chimney Cap—  
Most Efficient Combination on the market.

**STANDARD VENTILATOR CO., Lewisburg, Pa.**



*Patented*

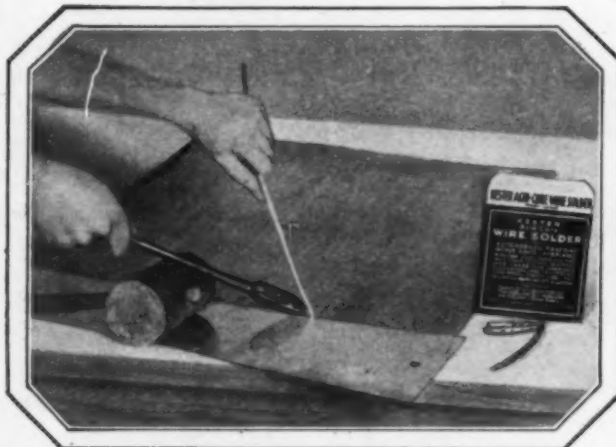
## KESTER SOLDER

*Self-Fluxing*



*(Underwriters' Laboratories Inspected)*

**"Requires Only Heat"**

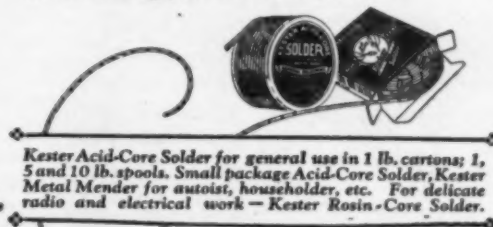


## Flows Under the Seams

**I**T IS IMPORTANT in Sheet Metal work  
to have well soldered joints. A diffi-  
cult job may be well handled to the  
finish—but if the soldering is weak,  
the work falls flat.

By using Kester Solder, you know  
your job will last. Inside of this hollow  
wire solder are tiny pockets full of  
scientifically prepared flux. This flows  
to the job just before the solder melts,  
and you guide it right where you want it.

This eliminates the old acid pot and  
saves one-third of the time together with  
labor and material. Kester figures a  
neat saving for the steady user.



*Kester Acid-Core Solder for general use in 1 lb. cartons; 1,  
5 and 10 lb. spools. Small package Acid-Core Solder, Kester  
Metal Mender for autoist, householder, etc. For delicate  
radio and electrical work—Kester Rosin-Core Solder.*

Manufactured by the  
**CHICAGO SOLDER COMPANY**  
4241 Wrightwood Ave.  
CHICAGO, U. S. A.



# BUYERS' DIRECTORY

- Acetylene (Gas) Dissolved.**  
Prest-O-Lite Co., Inc.,  
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- Air Filters.**  
Reed Air Filter Co.,  
Louisville, Ky.
- Bale Ties.**  
American Steel & Wire Co.,  
Chicago, Ill.
- Blowers.**  
Sturtevant Co., B. F., Boston, Mass.
- Bolts—Stove.**  
The Kirk-Latty Co.,  
Cleveland, Ohio
- Lamson & Sessions Co.,**  
Cleveland, Ohio
- Brakes—Bending.**  
Dreis & Krump Mfg. Co.,  
Chicago, Ill.
- Brakes—Cornice.**  
Dreis & Krump Mfg. Co.,  
Chicago, Ill.
- Brass and Copper.**  
Copper & Brass Research Association,  
New York
- Merchant & Evans Co.,**  
Philadelphia, Pa.
- Cans—Garbage.**  
Osborn Co., The J. M. & L. A.,  
Cleveland, Ohio
- Castings—Malleable.**  
Fanner Mfg. Co.,  
Cleveland, Ohio
- Ceilings—Metal.**  
Friedley-Voshardt Co.,  
Chicago, Ill.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Wheeling Corrugating Co.,**  
Wheeling, W. Va.
- Chaplets.**  
Fanner Mfg. Co.,  
Cleveland, Ohio
- Chain—Sash.**  
Parker-Kalon Corp.,  
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- Chimney Tops.**  
Standard Ventilator Co.,  
Lewisburg, Pa.
- Check Drafts.**  
Teela Sheet Metal Co.,  
Oshkosh, Wis.
- Cleaners—Furnace.**  
Sturtevant Co., B. F., Boston, Mass.
- Cleaners—Suction.**  
Sturtevant Co., B. F., Boston, Mass.
- Clinker Tongs.**  
L. J. Mueller Furnace Co.,  
Milwaukee, Wis.
- Clips—Roofing.**  
Wm. Pfeifer,  
New York, N. Y.
- Coal Chutes.**  
Majestic Co., The,  
Huntington, Ind.
- Copper.**  
Copper & Brass Research Association,  
New York
- Cornices.**  
Friedley-Voshardt Co.,  
Chicago, Ill.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Cut-offs—Rain Water.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Damper Clips.**  
L. J. Mueller Furnace Co.,  
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- Charlestown, Mass.**
- Diffuser—Air Duct.**  
Aeolus-Dickinson Co.,  
Chicago, Ill.
- L. J. Mueller Furnace Co.,**  
Milwaukee, Wis.
- Doors—Metal.**  
Lupton's Sons Co., David,  
Philadelphia, Pa.
- Drive Screws—Hardened Metallic.**  
Parker-Kalon Corp.,  
354 West 13th St., New York
- Eaves Trough.**  
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- Berger Bros. Co.,**  
Philadelphia, Pa.
- Berger Co., L. D.,**  
Philadelphia, Pa.
- Lupton's Sons Co., David,**  
Philadelphia, Pa.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- New Jersey Zinc Sales Co., The,**  
New York, N. Y.
- Wheeling Corrugating Co.,**  
Wheeling, W. Va.
- Elbows and Shoes—Conductor.**  
Barnes Zinc Products Co.,  
Chicago, Ill.
- Dieckmann Co., Ferdinand,**  
Cincinnati, Ohio
- Double-Duty Mfg. Co.,**  
Aurora, Ill.
- Lupton's Sons Co., David,**  
Philadelphia, Pa.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Wood Faces—Cold Air.**  
American Wood Register Co.,  
Elymouth, Ind.
- Eaglesfield Ventilator Co.,**  
Indianapolis, Ind.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Fences.**  
American Steel & Wire Co.,  
Chicago, Ill.
- Fittings—Conductor.**  
Barnes Zinc Products Co.,  
Chicago, Ill.
- Flue Thimbles.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Furnace Cement—Asbestos.**  
Buckeye Products Co., The,  
Cincinnati, Ohio
- Connors Paint Mfg. Co., Wm.,**  
Troy, N. Y.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Pecora Paint Co.,**  
Philadelphia, Pa.
- Furnace Cement—Liquid.**  
Technical Products Co.,  
Pittsburgh, Pa.
- Furnace Cleaners.**  
Sturtevant Co., B. F., Boston, Mass.
- Furnace Fans.**  
A. H. Robinson Company,  
Cleveland, Ohio
- Sturtevant Co., B. F., Boston, Mass.**
- Warm Air Furnace Fan Co., The,**  
Cleveland, Ohio
- Furnace Rings.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Walworth Run Fdy. Co.,**  
Cleveland, Ohio
- Furnaces—Gas.**  
Calkins & Pearce, Columbus, Ohio
- Furnaces—Warm Air.**  
Agricola Furnace Co.,  
Gadsden, Ala.
- American Furnace Co.,**  
St. Louis, Mo.
- American Foundry & Furnace Co.,**  
Bloomington, Ill.
- Brillion Iron Works,**  
Brillion, Wis.
- Calkins & Pearce, Columbus, Ohio**
- Colburn Heater Co.,**  
Chicago, Ill.
- Floral City Heater Co.,**  
Monroe, Mich.
- Forest City Fdy. & Mfg. Co.,**  
Cleveland, Ohio
- Henry Furnace & Fdy. Co.,**  
Cleveland, Ohio
- Hess-Snyder Co.,**  
Massillon, Ohio
- Homer Furnace Co.,**  
Coldwater, Mich.
- International Heater Co.,**  
Utica, N. Y.
- Keith Furnace Co.,**  
Des Moines, Ia.
- Lamneck Co., W. E.,**  
Columbus, Ohio
- Langenberg Mfg. Co.,**  
St. Louis, Mo.
- Lennox Furnace Co.,**  
Marshalltown, Ia.
- Syracuse, N. Y.**
- Liberty Foundry Co.,**  
St. Louis, Mo.
- Majestic Co., The,**  
Huntington, Ind.
- Marshalltown Heater Co.,**  
Marshalltown, Iowa
- May-Fiebeger Furnace Co.,**  
Newark, Ohio
- Meyer Furnace Co., The,**  
Peoria, Ill.
- Monitor Furnace Co.,**  
Cincinnati, Ohio
- Mt. Vernon Furnace & Mfg. Co.,**  
Mt. Vernon, Ill.
- Mueller Furnace Co., L. J.,**  
Milwaukee, Wis.
- Robinson Furnace Co.,**  
Chicago, Ill.
- Robinson Furnace Co., A. H.,**  
Cleveland, Ohio
- Rybolt Heater Co.,**  
Ashland, Ohio
- Security Stove & Mfg. Co.,**  
Kansas City, Mo.
- Standard Furnace & Supply Co.,**  
Omaha, Neb.
- St. Louis Heating Co.,**  
St. Louis, Mo.
- Success Heater Mfg. Co.,**  
Des Moines, Iowa
- Thomas & Armstrong Co.,**  
London, Ohio
- Thatcher Co.,**  
Chicago, Ill.
- XXth Century Heating & Ventilating Co.,**  
Akron, Ohio
- Utica Heater Co.,**  
Utica, N. Y.
- Waterman-Waterbury Co.,**  
Minneapolis, Minn.
- Western Steel Products Co.,**  
Duluth, Minn.
- Wise Furnace Co.,**  
Akron, Ohio
- Garages—Metal.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- The Thomas & Armstrong Co.,**  
London, Ohio
- Trachte Brothers Co., Inc.,**  
Madison, Wis.
- Gas (Acetylene) Dissolved.**  
Prest-O-Lite Co., Inc.,  
New York, N. Y.
- Gas (Nitrogen).**  
Linde Air Products Co.,  
New York, N. Y.
- Gas (Oxygen).**  
Linde Air Products Co.,  
New York, N. Y.
- Glass—Wire.**  
Lupton's Sons Co., David,  
Philadelphia, Pa.
- Grilles.**  
Diamond Mfg. Co., Wyoming, Pa.
- Harrington & King Perforating Co.,**  
Chicago, Ill.
- Hart & Cooley Co.,**  
New Britain, Conn.
- Tuttle & Bailey Mfg. Co.,**  
Chicago, Ill.
- United States Register Co.,**  
Battle Creek, Mich.
- Grilles—Store Front.**  
Tuttle & Bailey Mfg. Co.,  
Chicago, Ill.
- Guards—Machine and Belt.**  
Harrington & King Perforating Co.,  
Chicago, Ill.
- Handles—Boiler.**  
Berger Bros. Co.,  
Philadelphia, Pa.
- Handles—Soldering Iron.**  
Hyro Mfg. Co.,  
New York, N. Y.
- Hangers—Eaves Trough.**  
Berger Co., L. D.,  
Philadelphia, Pa.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Heaters—Cabinet.**  
Majestic Co., The,  
Huntington, Ind.
- Mueller Furnace Co., L. J.,**  
Milwaukee, Wis.
- Waterman-Waterbury Co.,**  
Minneapolis, Minn.
- Heaters—Gas.**  
Calkins & Pearce, Columbus, Ohio
- Heaters—School Room.**  
Floral City Heater Co.,  
Monroe, Mich.
- International Heater Co.,**  
Utica, New York
- Meyer Furnace Co., The,**  
Peoria, Ill.
- L. J. Mueller Furnace Co.,**  
Milwaukee, Wis.
- Standard Furnace & Supply Co.,**  
Omaha, Neb.
- Waterman-Waterbury Co.,**  
Minneapolis, Minn.
- Hooks—Conductor.**  
Berger Co., L. D.,  
Philadelphia, Pa.
- Hotels.**  
Fort Shelby Hotel,  
Detroit, Mich.
- Humidifiers.**  
Automatic Humidifier Co.,  
Waterloo, Iowa
- L. J. Mueller Furnace Co.,**  
Milwaukee, Wis.
- Robinson Furnace Co.,**  
Chicago, Ill.
- Lath—Expanded Metal.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.
- Machines—Crimping.**  
Bertsch & Co.,  
Cambridge City, Ind.
- Machinery—Culvert.**  
Bertsch & Co.,  
Cambridge City, Ind.
- Machines—Tinsmiths.**  
Bertsch & Co.,  
Cambridge City, Ind.
- Chicago Elbow Machine Co.,**  
Oak Park, Ill.
- Dreis & Krump Mfg. Co.,**  
Chicago, Ill.
- Marshalltown Mfg. Co.,**  
Marshalltown, Iowa
- Osborn Co., The J. M. & L. A.,**  
Cleveland, Ohio
- Peck, Stow & Wilcox Co.,**  
Southington, Conn.
- Ryerson & Son, Inc., Jos. T.,**  
Chicago, Ill.
- Whitney Mfg. Co., W. A.,**  
Rockford, Ill.
- Whitney Metal Tool Co.,**  
Rockford, Ill.
- Mailing Lists.**  
R. L. Polk Co.,  
Detroit, Mich.
- Ross-Gould Co.,**  
St. Louis, Mo.
- Mandrels.**  
Hyro Mfg. Co.,  
New York, N. Y.
- Metals—Perforated.**  
Diamond Mfg. Co., Wyoming, Pa.
- Harrington & King Perforating Co.,**  
Chicago, Ill.
- Miters.**  
Friedley-Voshardt Co.,  
Chicago, Ill.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Miters—Eaves Trough.**  
Barnes Zinc Products Co.,  
Chicago, Ill.
- Lupton's Sons Co., David,**  
Philadelphia, Pa.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Nails—Wire.**  
American Steel & Wire Co.,  
Chicago, Ill.
- Nickel—Zinc.**  
Apollo Metal Works,  
La Salle, Ill.
- Nitrogen (Gas).**  
Linde Air Products Co.,  
New York, N. Y.
- Ornaments—Sheet Metal.**  
Friedley-Voshardt Co.,  
Chicago, Ill.
- Geroch Bros. Mfg. Co.,**  
St. Louis, Mo.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Oxygen (Gas).**  
Linde Air Products Co.,  
New York, N. Y.
- Paint.**  
Connors Paint Mfg. Co., Wm.,  
Troy, N. Y.
- Pecora Paint Co.,**  
Philadelphia, Pa.
- Patterns—Furnace & Stove.**  
Cleveland Castings Pattern Co.,  
Cleveland, Ohio
- Quincy Pattern Co.,**  
Quincy, Ill.
- Vedder Pattern Works,**  
Troy, N. Y.
- Pipe and Fittings—Furnace.**  
Henry Furnace & Fdy. Co.,  
Cleveland, Ohio
- Lamneck Co., W. E.,**  
Columbus, Ohio
- Meyer & Bro. Co., F.,**  
Peoria, Ill.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Mueller Furnace Co., L. J.,**  
Milwaukee, Wis.
- Osborn Co., The J. M. & L. A.,**  
Cleveland, Ohio
- Robinson Furnace Co.,**  
Chicago, Ill.
- Standard Furnace & Supply Co.,**  
Omaha, Neb.
- Pipe and Fittings—Stove.**  
Meyer & Bro. Co., F., Peoria, Ill.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- Pipe—Conductor.**  
Barnes Zinc Products Co.,  
Chicago, Ill.
- Berger Bros. Co.,**  
Philadelphia, Pa.
- Dieckmann Co., Ferdinand,**  
Cincinnati, Ohio
- Friedley-Voshardt Co.,**  
Chicago, Ill.
- Lupton's Sons Co., David,**  
Philadelphia, Pa.
- Milwaukee Corrugating Co.,**  
Milwaukee, Wis.
- New Jersey Zinc Sales Co., The,**  
New York, N. Y.
- Wheeling Corrugating Co.,**  
Wheeling, W. Va.
- Wheeling Metal & Mfg. Co.,**  
Wheeling, W. Va.

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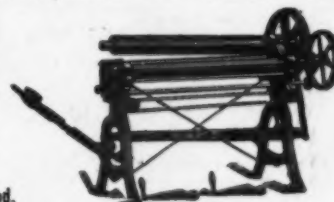
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Southington, Conn.  
Ryerson & Son, Inc.,  
Joa. T.,  
Chicago, Ill.  
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Rockford, Ill.  
Whitney Metal Tool Co.,  
Rockford, Ill.

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New York, N. Y.  
Whitney Metal Tool Co.,  
Rockford, Ill.  
Whitney Mfg. Co., W. A.,  
Rockford, Ill.

**Punches—Hand.**  
Hyro Mfg. Co., New York, N. Y.  
Whitney Metal Tool Co.,  
Rockford, Ill.  
Whitney Mfg. Co., W. A.,  
Rockford, Ill.

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Connors Paint Mfg. Co., Wm.,  
Troy, N. Y.  
Pecora Paint Co.,  
Philadelphia, Pa.

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Parker-Kalon Corp.,  
New York, N. Y.

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Tuttle & Bailey Mfg. Co.,  
Chicago, Ill.

**Radiators—Shields.**  
The Thomas & Armstrong Co.,  
London, Ohio

**Ranges—Combination Gas & Coal.**  
Quick Meal Stove Co.,  
St. Louis, Mo.  
Thatcher Co.,  
Newark, N. J.

**Ranges—Gas.**  
Quick Meal Stove Co.,  
St. Louis, Mo.

**Registers—Warm Air.**  
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Indianapolis, Ind.  
Hart & Cooley Co.,  
New Britain, Conn.  
Henry Furnace & Fdy. Co.,  
Cleveland, Ohio  
Lamneck & Co., W. E.,  
Columbus, Ohio  
Majestic Co., The,  
Huntington, Ind.  
Moyer & Bro. Co., F., Peoria, Ill.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
Mueller Furnace Co., L. J.,  
Milwaukee, Wis.  
Robinson Furnace Co.,  
Chicago, Ill.  
Rock Island Register Co.,  
Rock Island, Ill.  
Standard Furnace & Supply Co.,  
Omaha, Neb.  
Tuttle & Bailey Mfg. Co.,  
Chicago, Ill.  
United States Register Co.,  
Battle Creek, Mich.  
Walworth Run Fdy. Co.,  
Cleveland, Ohio

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Chicago Furnace Supply Co.,  
Chicago, Ill.  
Eaglesfield Ventilator Co.,  
Indianapolis, Ind.  
L. J. Mueller Furnace Co.,  
Milwaukee, Wis.  
United States Register Co.,  
Battle Creek, Mich.

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Northwestern Stove Repair Co.,  
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American Rolling Mill Co.,  
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Lupton's Sons Co., David,  
Philadelphia, Pa.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.

**Rivets—Stove.**  
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Lamson & Sessions Co.,  
Cleveland, Ohio  
Ryerson & Son, Inc.,  
Joa. T.,  
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Lalance & Grosjean Mfg. Co.,  
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Lamson & Sessions Co.,  
Cleveland, Ohio

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Bertsch & Co.,  
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Connors Paint Mfg. Co., Wm.,  
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Pecora Paint Co.,  
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Milwaukee Corrugating Co.,  
Milwaukee, Wis.

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Chicago, Ill.

Inland Steel Co.,  
Chicago, Ill.  
Merchant & Evans Co.,  
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Milwaukee, Wis.  
Osborn Co., The J. M. & L. A.,  
Cleveland, Ohio  
Ryerson & Son, Inc.,  
Joa. T.,  
Chicago, Ill.  
Wheeling Corrugating Co.,  
Wheeling, W. Va.

**Roofing—Tin.**  
Taylor Co., N. & G.,  
Philadelphia, Pa.  
Wheeling Corrugating Co.,  
Wheeling, W. Va.

**Roofing—Zinc.**  
New Jersey Zinc Sales Co., The,  
New York, N. Y.

**Rubbish Burners.**  
Hart & Cooley Co.,  
New Britain, Conn.

**Sal-Ammoniac.**  
Special Chemicals Co.,  
Waukegan, Ill.

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St. Louis Technical Institute,  
St. Louis, Mo.

**Schools—Warm Air Heating.**  
National Heatcraft Institute,  
Peoria, Ill.  
St. Louis Technical Institute,  
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**Screws—Hardened Metallic Drive.**  
Parker-Kalon Corp.,  
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**Screws—Hardened Self-Tapping.**  
Sheet Metal.  
Parker-Kalon Corp.,  
354 West 13th St., New York

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Harrington & King Perforating Co.,  
Chicago

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Marshalltown, Iowa  
Peck, Stow & Wilcox Co.,  
Southington, Conn.  
Ryerson & Son, Inc.,  
Joa. T.,  
Chicago, Ill.

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New York  
Viking Shear Co.,  
Erie, Pa.

**Sheets—Steel—Lead.**  
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Wheeling, W. Va.

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354 West 13th St., New York

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Massillon, Ohio  
Inland Steel Co.,  
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Merchant & Evans Co.,  
Philadelphia, Pa.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
Osborn Co., The J. M. & L. A.,  
Cleveland, Ohio  
Ryerson & Son, Inc.,  
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Chicago, Ill.  
Taylor Co., N. & G.,  
Philadelphia, Pa.  
Wheeling Corrugating Co.,  
Wheeling, W. Va.

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Central Alloy Steel Corp.,  
Massillon, Ohio  
Merchant & Evans Co.,  
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Ryerson & Son, Inc.,  
Joa. T.,  
Chicago, Ill.

**Roofing—Steel—Lead Coated.**  
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Wheeling, W. Va.

**Sheets—Tin.**  
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Taylor Co., N. & G.,  
Philadelphia, Pa.

**Sheets—Zinc.**  
New Jersey Zinc Sales Co., The,  
New York, N. Y.

**Shingles and Tiles—Metal.**  
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Wheeling Corrugating Co.,  
Wheeling, W. Va.  
Wheeling Metal & Mfg. Co.,  
Wheeling, W. Va.

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Milwaukee Corrugating Co.,  
Milwaukee, Wis.

**Sifters—Ash.**  
Diener Mfg. Co., G. W.,  
Chicago, Ill.

**Sky Lights.**  
Lupton's Sons Co., David,  
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Michigan Fireproof Skylight Co.,  
Benton Harbor, Mich.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.

**Salps.**  
Peck, Stow & Wilcox Co.,  
Southington, Conn.

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Chicago Solder Co.,  
Chicago, Ill.  
Double-Duty Elbow Co.,  
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Milwaukee Corrugating Co.,  
Milwaukee, Wis.

**Soldering Furnaces.**  
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Clayton & Lambert Mfg. Co.,  
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Diener Mfg. Co., G. W.,  
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Double Blast Mfg. Co.,  
North Chicago, Ill.  
Quick Meal Stove Co.,  
St. Louis, Mo.

**Soldering Supplies.**  
Double-Duty Elbow Co.,  
Aurora, Ill.  
Special Chemicals Co.,  
Waukegan, Ill.

**Specialties—Hardware.**  
Diener Mfg. Co., G. W.,  
Chicago  
Hessler Co., H. E., Syracuse, N. Y.

**Stars—Hard Iron Cleaning.**  
Fanner Mfg. Co.,  
Cleveland, Ohio

**Statuary.**  
Friedley-Voshardt Co.,  
Chicago, Ill.  
Geroek Bros. Mfg. Co.,  
St. Louis, Mo.

**Stove Pipe Reducers.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.

**Stoves—Camp.**  
Quick Meal Stove Co.,  
St. Louis, Mo.

**Stoves—Gasoline and Oil.**  
Quick Meal Stove Co.,  
St. Louis, Mo.

**Stoves and Ranges.**  
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Thatcher Co.,  
Newark, N. J.

**Tacks, Staples, Spikes.**  
American Steel & Wire Co.,  
Chicago, Ill.

**Tinplate.**  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
Osborn Co., The J. M. & L. A.,  
Cleveland, Ohio  
Taylor Co., N. & G.,  
Philadelphia, Pa.

**Tools—TinSmith's.**  
Bertsch & Co.,  
Cambridge City, Ind.  
Chicago Elbow Machine Co.,  
Oak Park, Ill.  
Double-Duty Mfg. Co.,  
Aurora, Ill.  
Dries & Krump Mfg. Co.,  
Chicago, Ill.  
Hyro Mfg. Co.,  
New York, N. Y.  
Marshalltown Mfg. Co.,  
Marshalltown, Iowa  
Osborn Co., The J. M. & L. A.,  
Cleveland, Ohio  
Peck, Stow & Wilcox Co.,  
Southington, Conn.  
Ryerson & Son, Inc.,  
Joa. T.,  
Chicago, Ill.  
Unishear Co., The,  
New York, N. Y.  
Viking Shear Co.,  
Erie, Pa.  
Whitney Mfg. Co., W. A.,  
Rockford, Ill.  
Whitney Metal Tool Co.,  
Rockford, Ill.

**Torches.**  
Burgess Soldering Furnace Co.,  
Columbus, Ohio  
Clayton & Lambert Mfg. Co.,  
Detroit, Mich.  
Diener Mfg. Co., G. W.,  
Chicago, Ill.  
Quick Meal Stove Co.,  
St. Louis, Mo.

**Trade Extension.**  
Copper & Brass Research Association,  
New York, N. Y.  
Sheet Steel Trade Extension Committee,  
Pittsburgh, Pa.

**Trimnings—Stove.**  
Fanner Mfg. Co.,  
Cleveland, Ohio

**Ventilators.**  
Akrot Ventilators, Inc.,  
Chicago, Ill.  
Arex Company,  
Chicago, Ill.  
Aeolus Dickinson Co.,  
Chicago, Ill.  
Berger Bros. Co.,  
Philadelphia, Pa.  
Friedley-Voshardt Co.,  
Chicago, Ill.  
Kernchen Co.,  
Chicago, Ill.  
Lupton's Sons Co., David,  
Philadelphia, Pa.  
Milwaukee Corrugating Co.,  
Milwaukee, Wis.  
Royal Ventilator Co.,  
Philadelphia, Pa.  
Standard Ventilator Co.,  
Lewisburg, Pa.  
Sturtevant Co.,  
Boston, Mass.

**Ventilators—Ceiling.**  
Eaglesfield Ventilator Co.,  
Indianapolis, Ind.  
Hart & Cooley Co.,  
New Britain, Conn.  
Henry Furnace & Fdy. Co.,  
Cleveland, Ohio  
Tuttle & Bailey Mfg. Co.,  
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Sturtevant Co., B. F.,  
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Lupton's Sons Co., David,  
Philadelphia, Pa.

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American Steel & Wire Co.,  
Chicago, Ill.

**Wire Hoops.**  
American Steel & Wire Co.,  
Chicago, Ill.

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American Steel & Wire Co.,  
Chicago, Ill.

**Zinc.**  
Apollo Metal Works,  
La Salle, Ill.

**Merchants & Evans Co.,**  
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New Jersey Zinc Co., The,  
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**Zinc—Polished.**  
Apollo Metal Works,  
La Salle, Ill.



## WANTS AND SALES

Any yearly subscriber to AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired.

## BUSINESS CHANCES

**Lightning Rods**—Dealers who are selling Lightning Protection will make money by writing us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fittings are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddle Company, Marshfield Wisconsin.

**For Sale**—The general sheet metal business of Henseler & Naused, 1318 Marshall street, N. E., Minneapolis, Minnesota, including buildings, full equipment, power, machinery and a going business is for sale by surviving partner and administrator for deceased partner. This is one of the best shops in the Twin Cities, having served the Northwest for 25 years in the manufacture of fireproof doors and windows, roofing, cornices and all kinds of sheet metal work. Inspection and correspondence invited. Address B-67, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 2-3t

Would you pay three thousand dollars for four thousand five hundred dollars' worth of plumbing, heating and sheet metal stock, tools, fixtures and equipment, located in eastern Iowa, which is doing an annual business ranging from seventeen to twenty-four thousand dollars? If so and you want to do business write B-61, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t.

A splendid opportunity for a first class roofer in all branches to buy half interest in a good sheet metal business. In the best city in Florida. Must know how to figure from blue prints. Address B-62, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t.

**For Sale**—Sheet metal and roofing business; shop completely equipped; fine location; small rent; established in this location ten years; good reputation; never in need of work. 921 W. 87th Street, Chicago, Illinois. Phone Stewart 8922, Beverly 6710. 2-3t

**For Sale**—Bargain on a good paying business. Property included 90 ft. front on Broadway by 120 ft. Full stock of new and second hand furniture, hardware, etc. Population of town 25,000. Address Eckhard Merc. Co., 512 E. Broadway, Alton, Illinois. 26-3t.

**For Sale**—Sheet metal and warm air furnace shop in Northern Missouri town. Ten thousand population. Good location. Cheap rent. Stock, tools and fixtures about \$1,200. Address B-65, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 1-3t.

**For Sale**—Tin shop. Good Kansas town. 5,000 inhabitants. Good reason for selling. Priced right and small amount capital required to handle. Address B-59, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t.

Fully equipped sheet metal and roofing shop, also Reo truck. Will give lease on shop. The shop is located on state highway, 4 car lines and 2 bus lines pass the place. Address E. L. Gibson, 947 West 8th Street, Cincinnati, Ohio. 1-3t.

**For Sale**—Plumbing, tinning and heating business in town of 1,200. Excellent opportunity for tinner who can do plumbing. Address B-72, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 2-1t

## BUSINESS CHANCES

Want to trade a bungalow at St. Paul, Minnesota, for a hardware store. Address B-57, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t.

Wanted—To hear from owner hardware store for sale. Cash price, particulars. D. F. Bush, Minneapolis, Minnesota. 26-2t.

## SITUATION WANTED

**Situation Wanted**—By first-class tinner and furnace man. Can do inside and outside work. 25 years at the trade. Nothing but steady job the year around. Am married. Can do anything that comes in any tin shop. Address W. J. Mack, 106½ East Main Street, Saint Charles, Illinois. 25-5t

**Situation Wanted**—Young married man with 6 years' experience in sheet metal and furnace work. Also can do slate and tile roofing. Must be steady position. Qualifications and experience on request. High school graduate. Address B-58, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t.

**Situation Wanted**—By sheet metal worker with ten years' experience, who can work inside and outside, also make patterns and read blue prints. Age 32. Must be steady position with year around work. Address B-63, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

**Situation Wanted**—By capable mechanic in sheet metal shop as foreman or manager; also production man in sheet metal department of furnace manufacturer. Address B-66, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 1-3t.

**Situation Wanted**—By middle aged man. A-1 sheet metal worker, on cornice, skylight and ventilation. Experience in all classes of sheet metal work. Absolutely reliable. Address Dan Coleman, 1524½ Broadway, Mattoon, Illinois. 1-3t.

**Situation Wanted**—By middle aged tinner and furnace man. Good mechanic and wishes steady position in Oregon or Washington states only. Address B-60, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t.

**Situation Wanted**—Permanent position by capable plumber carrying Illinois and Wisconsin license. Lead and iron worker. Thoroughly reliable. Address B-68, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 2-3t

**Situation Wanted**—By sheet metal worker and furnace installer. Fifteen years' experience. Address "Tinner," Room 37, Columbia Hotel, Rockford, Illinois. 2-3t

## SITUATION WANTED

**Situation Wanted**—By an experienced sheet metal and furnace installer; steady employment; married; 50 years old; steady habits. If interested write Wm. R. H. Cooke, 1523 North 5th Street, West, Cedar Rapids, Iowa. 2-3t

## HELP WANTED

Wanted — A first-class sheet metal worker; knowledge of plumbing preferred. One capable of doing anything that comes in an ordinary shop, gutter, blowpiping, roofing, etc. Must be capable of doing good work in reasonable length of time. Give references, experience and wages. Address B-64, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 26-3t

Wanted — A combination sheet metal worker and plumber. Cannot use a "slow poke" or booze fighter. Will guarantee a steady job to the right man. This is an ideal country town of 1,600 people with good schools and churches. Address Sterling Service Shop, Mt. Sterling, Ohio. 1-3t

Wanted—We have an opening for a heating engineer with pep and ability to sell. State qualifications, experience and salary expected in first letter. Address Meyers Fuel Saver Co., Inc., 314 West Milwaukee Street, Janesville, Wisconsin. 26-3t

Wanted — A combination sheet metal, plumbing and heating man. 53 hours per week. Well equipped shop. Good Minnesota town. Address B-69, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 2-3t

Wanted—At once, all around man to do sheet metal and some plumbing such as comes in a country shop. Wages \$30.00 per week year around. Address O. L. Doward, Box 115, Mount Morris, Illinois. 1-3t.

Wanted—Sheet metal worker and furnace man that can do square duct ventilation from blue prints. State qualifications and wages wanted in reply. Also when you can come. Noble Sheet Metal Works, Rhinelander, Wisconsin. 2-3t

Wanted — An all-around sheet metal worker. Must be experienced and reliable. Address Hayes Sheet Metal Works, 111 North 3rd Street, DeKalb, Illinois. 2-3t

## Apollo NICKEL ZINC

PURE NICKEL SURFACE NON-RUSTING SHEETS

We will send a sample and a result-getting sales letter to every prospect in your territory.

ALL you have to do is stock APOLLO NICKEL ZINC and lend your co-operation. Our method of going after business for you is making profits for thousands of other sheet metal men.

APOLLO NICKEL ZINC is unexcelled for Table Tops—Drain Boards—Cupboards—Bread Boxes—Work Tables—Kitchen Cabinets—Reflectors—Steam Tables—Candy Trays—Linen Chests—Medicine Chests, etc.

Just send the coupon below TODAY

APOLLO METAL CO., LA SALLE, ILL.

Send me a sample of APOLLO NICKEL ZINC and full details about your advertising letters.

Name \_\_\_\_\_

Address \_\_\_\_\_



Mention AMERICAN ARTISAN in your reply—Thank you!

**TINNERS' TOOLS**

Wanted—One second-hand 8-ft. steel cornice brake; must be in good condition; state price. Address B-71, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 2-3t

Wanted—An eight or ten foot hand power cornice brake. Must be in good condition. State name of maker. Address Geo. W. Dollman, Sharon Avenue, Glendale, Ohio. 1-3t.

**BOOKS**

The Ventilation Handbook, by Charles L. Hubbard. A practical book designed to cover the principles and practice of ventilation as applied to furnace heating; ducts, flues and dampers for gravity heating; fans and fan work for ventilation and hot blast heating by means of a comprehensive series of questions, answers and very plain descriptions easy to understand. Price \$2.00. Order from Book Dept., AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

Manual of Automotive Radiator Construction and Repair, by F. L. Curfman and T. H. Leet—Anyone interested in Radiator Repairing will find the 185 pages of practical instructions and the 120 illustrations showing actual construction and repairing a big help. In a condensed manner some four to five thousand answers to questions are given. It is thoroughly practical as both authors are men of wide experience in this work. Printed in large, easy to read type. Measures 5 1/2 x 9 inches. Price \$2.50. Order from Book Dept., AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

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Patent Attorney  
Barrister Bldg., WASHINGTON, D. C.

**WANTED  
MANAGERS AND SALESMEN**

We are in need of two managers and three salesmen to sell Round Oak Furnaces. Call or write, 711 South Wells Street, Chicago, Illinois. Round Oak Heating Company. 25-1t



**SIPHONAGE VENTILATOR**  
Simple in design—Accurate in detail.  
EFFICIENT IN EXHAUST  
Write for prices.  
**AKRAT VENTILATORS, INC.**  
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**SPECIAL NOTICES**


**AREX**  
Original Siphonage Ventilator  
The Power Fans  
Only Rival!  
200,000 Perfect Installations!  
Write for prices today  
**AREX COMPANY** 1581 Conway Bldg. CHICAGO

**PLANT & EQUIPMENT**

FOR SALE—An exceptional opportunity to purchase an established business manufacturing a wide variety of sheet metal products and with a good list of customers. Address W-29, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 2-1t

**BUSINESS  
OPPORTUNITY FOR  
FABRICATORS**

The Sheet Steel Trade Extension Committee desires correspondence with manufacturers equipped to flange sheets up to ten feet long and to punch very light structural shapes. To a few such who have the production and marketing viewpoint, a very attractive proposition is open. Address: Sheet Steel Trade Extension Committee, 332 Oliver Building, Pittsburgh, Pa. 2-2t

**WANTED  
FURNACE SALESMAN**

For Iowa. Must have a clean, successful record. Give record and references in first letter. An exceptional opportunity for a man who understands the Standard Code and can sell furnaces. Address W-30, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 2-2t

**SPECIAL NOTICES**


**CLEAN HEAT**  
WHEN YOU USE  
**INSALUTE**  
LIQUID PORCELAIN  
ADHESIVE CEMENT  
DOUBLE SEALS EVERY JOINT  
APPLIED LIKE PAINT  
OVER ASBESTOS CEMENT  
MAKES JOINTS  
GAS-TIGHT  
WITHOUT RESET-  
TING FURNACE  
WITHSTANDS  
WHITE HEAT  
TRIAL  
OFFER  
An 8-lb. can  
of  
INSALUTE  
(furnace seal-  
ing paint)  
for \$2.00  
**TECHNICAL PRODUCTS CO.**  
116 Sheridan Square Pittsburgh, Pa.  
DISTRIBUTORS—**FOLLANSBEE BROS. CO.**  
PITTSBURGH, PA.

**Manufacturers  
of  
Warm Air Heaters**

**H**ERE'S the salesman  
you're looking for.

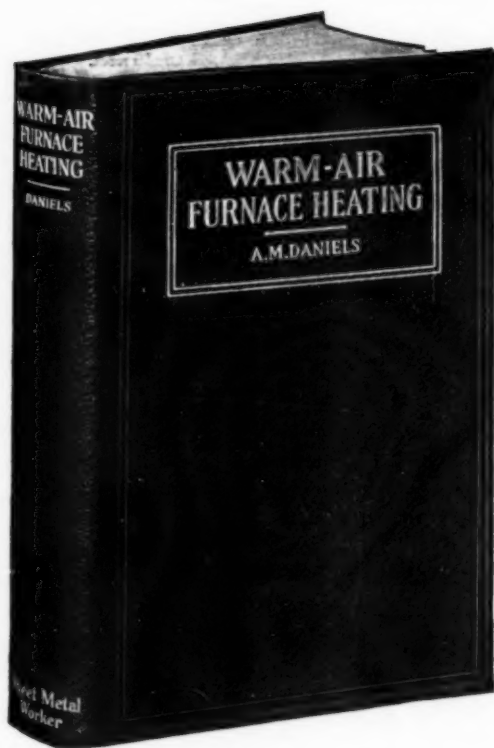
He can help you in that sales drive that you are putting on—he gets results—he knows the game—he knows the trade and he is well known and respected by thousands of live, high class warm air heater installers throughout the country and especially in the middle west and west.

He has called on the trade and sold warm air heaters for many years—yet he's an up-to-date salesman who works every week of the year—rain or shine.

This salesman's name is  
**AMERICAN ARTISAN**  
and you can secure his services at once.

Write today and get complete details concerning his ability to work for you and with your regular salesmen.





## Here is the book they are all talking about---

*Just off the Press—Now ready for you*

**I**T IS the book that you have been asking for—a book on Warm Air Furnace Heating that is **UP-TO-DATE**—a book that covers every phase of the subject giving exact data based on research work.

Written by A. M. Daniels.

Here is the book that will enable both the experienced furnace man and the student to obtain a working knowledge of up-to-date scientific warm air furnace heating.

*It covers the subject completely.*

Many tables are included and some big labor savers in calculating pipe sizes—also many diagrams.

**450 pages, 7x9 inches**

*Bound in semi-flexible imitation leather--  
Stamped in gold--*

**PRICE \$5.00 POSTPAID**

*Send in your order today*

AMERICAN ARTISAN,  
620 So. Michigan Ave., Chicago, Ill.

Enclosed find \$5.00 for which send me WARM AIR FURNACE HEATING by A. M. DANIELS.  
10% discount allowed on book and renewal subscription if ordered together.

Name .....

Street Number .....

Town ..... State .....

## SELL this different Metal Clothes Chute Door to

**Contractors and Home Owners**

THE Robinson Metal Clothes Chute Door is making extra profits for many Sheet Metal Contractors.

### HEAVILY NICKELED INSIDE AND OUT

It is more economical to install than wood clothes chute doors, it is much better looking and because it is metal it will not warp or crack.

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It is easy to install—requires no special fittings and no changes are necessary in the construction of the chute.

### HINGE ALLOWS FULL OPENING 9/4x12 1/4

It is very attractive and high quality, yet economical enough to induce ready sales.

### PATENT CATCH PROVIDES EASY AND CERTAIN OPERATION

Write for full details, circular and prices today.



**PUT a Robinson Metal Clothes Chute Door in your Window Display. Its heavy nicked finish attracts attention.**

**The A. H. ROBINSON COMPANY**  
MASSILLON, OHIO



**GEROCK BROS. MFG. CO.**  
**SHEET METAL ORNAMENTS**  
AND STATUARY  
1252 So. Vandeventer Ave., St. Louis, Mo., U.S.A.  
*Write for Catalogue*

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STANDARD OF THE WORLD



**THE BEST BRAKE FOR ALL PURPOSES:** Most Durable, Easiest Operated, Low in Price; Made in All Lengths and to Bend All Gauges of Metal. Over 23,000 in use.

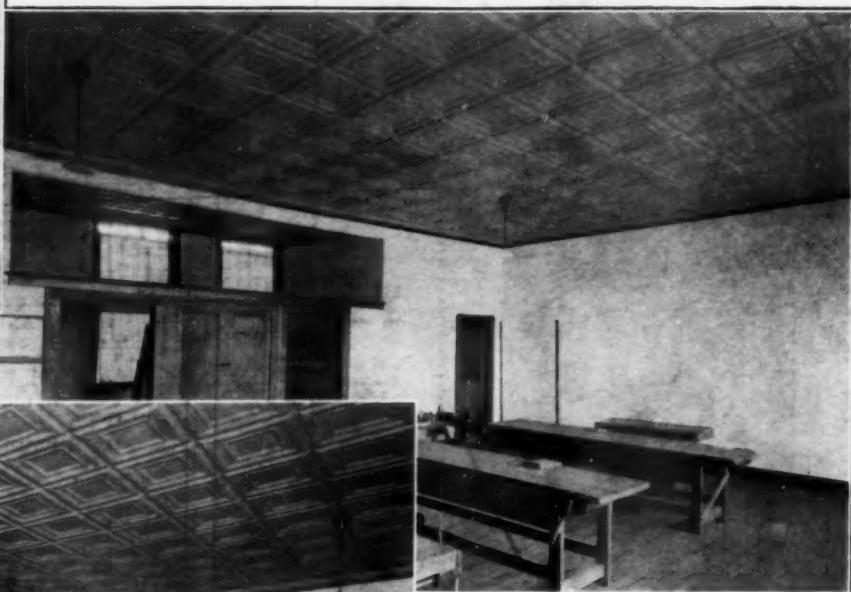
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**DREIS & KRUMP MFG. CO., 7404 Loomis Street, CHICAGO**





MERTON SCHOOL, Merton, Wis. Metal Ceilings erected by Wm. Gallun Sheet Metal Works, Milwaukee.  
Below, at right: Manual Training room. At left: 7th, 8th, 9th Grades room.



## A Lesson in Safety! for School Boards and Taxpayers

**SAFETY** and Economy! Wherever a new school building is going to be erected or an old one is to be remodeled, the facts of the following and other sad and expensive experiences should be considered:—

The taxpayers of Merton, a small Wisconsin town, built a beautiful new school five years ago—15 rooms and a gymnasium. Walls and ceilings were plastered on wood lath. After two years, the plaster began to loosen and fall. Teachers and children were in constant danger of being killed or crippled by heavy blocks of falling plaster. Although new, the school was unsafe, unsightly, insanitary!

During the summer vacation period of 1926, all ceilings throughout the building were replaced with Milcor "Invisible Joint" Metal Ceilings. Merton is now satisfied. Its school at last is safe—and will remain so. The School Board is well pleased. The Superintendent of Schools and the Industrial Commission have commented favorably on the safety, neatness and expert erection of these metal ceilings.

*The moral of this lesson is plain. Consult Milcor BEFORE building or remodeling.*

MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis.  
CHICAGO, ILL. KANSAS CITY, MO. LA CROSSE, WIS. BOSTON, MASS.

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"Invisible Joint"

## METAL CEILINGS

*Avoid this!*



Instead of the danger of falling ceilings, unsightly rooms, fire hazards and undue expense, Milcor "Invisible Joint" Metal Ceilings & Walls offer these advantages:

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2. Cannot crack, shrink, warp, or fall off.
3. Easily applied; once on, they stay on; nothing to work loose.
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7. Waterproof, dust proof, vermin proof.
8. Easily cleaned with soap and water.
9. Easily, economically refinished; require less paint than any other type of interior finish.
10. Vibration, jolts or jars or settling strains do not effect them.

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